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Vol. VII

TRANSCRIPT OF RECORD

Supreme Court of the United States

OCTOBER TERM, 1938

No. 27

**THE TENNESSEE ELECTRIC POWER COMPANY,
ET AL., APPELLANTS,**

vs.

**TENNESSEE VALLEY AUTHORITY, ARTHUR E.
MORGAN, HARCOURT A. MORGAN AND DAVID
E. LILIENTHAL**

**APPEAL FROM THE DISTRICT COURT OF THE UNITED STATES FOR
THE EASTERN DISTRICT OF TENNESSEE**

FILED APRIL 18, 1938.

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THE EASTERN DISTRICT OF TENNESSEE

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[fol. 4063] DEFENDANTS' EXHIBIT No. 1

Common Stock Dividends Paid by the Tennessee Electric
Power Company for Four Years, Ending 1936

Year	Rate Per Share	Total
1933.....	.75	\$318,750
1934.....	.50	212,500
1935.....	.40	170,000
1936.....	.50	212,500
1937.....	None	None
		<hr/> \$913,750

[fol. 4064] DEFENDANTS' EXHIBIT No. 2

Stipulation No. 11

It is hereby stipulated and agreed by and between the parties hereto, by their respective solicitors, that the tables of operating statistics attached hereto correctly state the facts set forth therein.

Each of the parties specifically reserves the right to object to the introduction of any of the facts stipulated above on the ground of materiality or relevance.

Baker, Hostetler, Sidle & Patterson, Frantz, McConnell & Seymour, Trabue, Hume & Armistead,
Charles M. Seymour, Solicitors for Complainants.
John Lord O'Brien, Solicitors for Defendants.

(Here follow two pasters, side folio 4065 and 4066)

4008A

DEFENDANTS' EXHIBIT No. 2

Alabama Power Company

Electric Revenue and Expense

1927-1936

(fol. 4065)

	1927	1928	1929	1930	1931	1932	1933	
Electric Revenue:								
Residential	\$2,078,875.17	\$2,419,490.65	\$2,273,413.65	\$2,558,395.95	\$2,743,335.55	\$2,705,720.90	\$2,474,421.66	\$
Rural	341.90	42,774.03	133,781.46	336,109.42	371,733.02	372,278.34	351,786.55	
Commercial	2,988,923.50	3,066,342.79	3,147,187.16	2,837,317.29	2,786,054.14	2,504,887.03	2,331,921.19	
Industrial	6,257,479.17	6,525,393.93	6,817,624.24	6,658,142.98	6,641,479.13	5,951,308.41	6,145,091.31	
Street Lighting	242,238.15	283,622.34	318,423.25	328,057.62	341,859.31	333,781.06	317,000.75	
Sub-Total	11,567,857.89	12,337,623.74	12,690,429.76	12,718,023.26	12,884,461.15	11,867,975.74	11,620,221.46	1
Other Utilities	4,319,911.53	3,975,910.92	4,664,923.58	4,296,805.68	3,988,332.22	3,077,550.79	3,133,706.17	1
Total	15,887,769.42	16,315,634.66	17,355,353.34	17,014,828.94	16,872,793.37	14,945,526.53	14,753,927.63	1
Miscellaneous Revenue	312,491.52†	351,886.16†	78,301.13	242,688.51	269,688.94	227,791.25	350,110.95	
Total Electric Revenue	\$15,575,277.90	\$15,963,748.50	\$17,433,654.47	\$17,257,517.45	\$17,142,482.31	\$15,173,317.78	\$15,104,038.58	\$1
Electric Operating Expense:								
Production	\$3,349,683.71	\$1,888,405.93	\$1,529,215.59	\$1,876,344.08	\$1,859,684.64	\$1,066,494.65	\$1,010,826.68	\$
Transmission	414,984.16	374,525.68	331,381.17	333,696.40	597,685.87	447,878.51	450,068.03	
Distribution	635,177.90	698,902.79	717,236.77	710,550.95	494,428.80	470,838.81	470,930.68	
Utilization	109,413.04	116,715.14	129,287.11	96,148.65	133,709.79	140,547.56	128,217.19	
Commercial	206,249.40	228,708.40	265,284.43	299,915.06	279,122.48	247,170.27	234,815.67	
New Business	55,569.86	60,524.40	251,077.49	174,978.66	366,492.72	309,526.75	343,657.63	
General	1,185,909.71	1,184,855.79	1,310,172.89	1,505,383.61	1,382,592.73	1,451,315.99	1,256,881.31	
Uncollectible Bills	45,780.70	120,979.30	87,238.98	88,782.28	51,350.02	47,260.06	77,500.00	
Taxes	988,107.39	1,288,416.08	1,602,381.16	1,922,714.59	1,960,543.04	1,929,986.43	2,100,803.76	
Total Operating Expense	\$6,990,875.87	\$5,962,033.51	\$6,223,275.59	\$7,008,514.28	\$7,125,610.09	\$6,111,019.03	\$6,073,700.95	\$
Electric Gross Income	\$8,584,402.03	\$10,001,714.99	\$12,210,378.88	\$10,249,003.17	\$10,016,872.22	\$9,062,298.75	\$9,030,337.63	\$

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4008A

DEFENDANTS' EXHIBIT No. 2

Alabama Power Company
Electric Revenue and Expense

1927-1936

1927	1928	1929	1930	1931	1932	1933	1934	1935	1936
\$2,078,875.17	\$2,419,490.65	\$2,273,413.65	\$2,558,395.95	\$2,743,335.55	\$2,705,720.90	\$2,474,421.66	\$2,454,631.62	\$2,740,918.57	\$2,980,605.11
341.90	42,774.03	133,781.46	336,109.42	371,733.02	372,278.34	351,786.55	406,232.78	478,384.65	623,796.32
2,988,923.50	3,066,342.79	3,147,187.16	2,837,317.29	2,786,054.14	2,504,887.03	2,331,921.19	2,370,218.63	2,539,191.32	2,808,940.65
6,257,479.17	6,525,393.93	6,817,624.24	6,658,142.98	6,641,479.13	5,951,308.41	6,145,091.31	5,939,221.84	6,396,252.07	7,405,938.05
242,238.15	283,622.34	318,423.25	328,057.62	341,859.31	333,781.06	317,000.75	309,193.44	307,982.73	305,100.49
11,567,857.89	12,337,623.74	12,690,429.76	12,718,023.26	12,884,461.15	11,867,975.74	11,620,221.46	11,479,498.31	12,462,729.34	14,124,380.62
4,319,911.53	3,978,010.92	4,664,923.58	4,296,805.68	3,988,332.22	3,077,550.79	3,133,706.17	3,113,411.17	3,486,463.15	3,793,825.64
15,887,769.42	16,315,634.66	17,355,353.34	17,014,828.94	16,872,793.37	14,945,526.53	14,753,927.63	14,592,909.48	15,949,192.49	17,918,206.26
312,491.52†	351,886.16†	78,301.13	242,688.51	269,688.94	227,791.25	350,110.95	402,120.55	415,664.54	412,102.47
\$15,575,277.90	\$15,963,748.50	\$17,433,654.47	\$17,257,517.45	\$17,142,482.31	\$15,173,317.78	\$15,104,038.58	\$14,995,030.03	\$16,364,857.03	\$18,330,308.73
\$3,349,683.71	\$1,888,405.93	\$1,529,215.59	\$1,876,344.08	\$1,859,684.64	\$1,066,494.65	\$1,010,826.68	\$1,010,273.52	\$1,227,786.35	\$1,769,806.27
414,984.16	374,525.68	331,381.17	333,696.40	597,685.87	447,878.51	450,068.03	477,516.54	496,876.93	553,101.46
635,177.90	698,902.79	717,236.77	710,550.95	494,428.80	470,838.81	470,930.68	507,778.29	594,124.47	635,175.30
109,413.04	116,715.14	129,287.11	96,148.65	133,709.79	140,547.56	128,217.19	170,156.12	161,010.98	169,965.22
206,249.40	228,708.40	265,284.43	299,915.06	279,722.48	247,170.27	234,815.67	250,864.11	269,338.63	291,741.86
55,569.86	60,524.40	251,077.49	174,978.66	366,492.72	309,526.75	343,657.63	464,596.42	540,934.74	648,184.25
1,185,909.71	1,184,855.79	1,310,172.89	1,505,383.61	1,382,592.73	1,451,315.99	1,256,881.31	1,212,653.16	1,424,508.63	1,561,111.85
45,780.70	120,979.30	87,238.98	88,782.28	51,350.02	47,260.06	77,500.00	78,000.00	72,000.00	72,000.00
988,107.39	1,288,416.08	1,602,381.16	1,922,714.59	1,960,543.04	1,929,986.43	2,100,803.76	2,187,841.38	2,393,392.05	2,619,823.47
\$6,990,875.87	\$5,962,033.51	\$6,223,275.59	\$7,008,514.28	\$7,125,610.09	\$6,111,019.03	\$6,073,700.95	\$6,359,679.54	\$7,179,972.63	\$8,320,909.68
\$8,584,402.03	\$10,001,714.99	\$12,210,378.88	\$10,249,003.17	\$10,016,872.22	\$9,062,298.75	\$9,030,337.63	\$8,635,350.49	\$9,184,884.40	\$10,009,399.05

4008B

DEFENDANTS' EXHIBIT No. 2

Alabama Power Company

Energy Sales, Output and Active Meters

1927-1936

	1927	1928	1929	1930	1931	1932	1933	
Energy Sales								
Residential.....	27,505,138	33,247,802	40,856,914	50,642,059	56,457,693	56,434,357	53,513,196	
Rural.....	2,457	415,140	1,529,399	4,836,741	5,785,858	5,957,136	5,846,997	
Commercial.....	65,577,853	58,903,274	64,738,641	69,157,122	66,779,781	58,599,282	54,820,235	
Industrial.....	651,751,082	647,391,200	668,854,417	638,150,060	669,736,166	649,725,214	714,147,613	68
Street Lighting.....	4,20,630	5,611,740	5,694,368	6,388,605	6,781,762	6,670,012	6,272,888	
Sub-Total.....	749,157,160	745,569,156	781,673,739	769,174,587	805,541,260	777,386,001	834,600,929	88
Other Utilities.....	723,697,267	602,438,379	652,047,341	727,601,927	684,979,843	387,122,111	536,534,804	58
Total.....	1,472,854,427	1,348,007,535	1,433,721,080	1,496,776,514	1,490,521,103	1,164,508,112	1,371,135,733	1,46
Company Use.....	27,495,169	21,521,634	22,575,732	27,653,810	33,024,756	24,778,970	22,967,032	1
Lost & Unaccounted for.....	258,793,523	216,648,384	258,953,310	258,905,958	243,991,900	229,784,164	218,959,817	28
Exchange & Storage.....						134,538,400	137,462,110	11
Total Output.....	1,759,143,119	1,586,177,553	1,715,250,122	1,783,336,282	1,767,537,759	1,553,609,646	1,750,524,692	1,88
System Peak—Total.....	343,180	331,200	370,000	412,800	402,810	389,120	390,720	
System Peak—In Alabama.....	226,900	245,580	260,746	268,774	264,477	254,372	253,300	
Customers Active Meters (End of Period):								
Residential.....	65,530	69,883	73,373	74,928	73,199	68,883	69,368	
Rural.....	75	1,532	2,735	6,133	6,212	5,728	7,308	
Commercial.....	22,290	23,777	26,337	25,978	24,462	22,987	22,187	
Industrial.....	463	558	700	773	632	537	650	
Street Lighting.....	375	493	512	199	170	164	145	
Sub-Total.....	88,733	96,243	103,657	108,011	104,675	98,299	99,658	
Other Utilities.....	15	18	17	51	51	51	51	
Total.....	88,748	96,261	103,674	108,062	104,726	98,350	99,709	

[fol. 4066]

4008B

DEFENDANTS' EXHIBIT No. 2

Alabama Power Company

Energy Sales, Output and Active Meters

1927-1936

1927	1928	1929	1930	1931	1932	1933	1934	1935	1936
27,505,138	33,247,802	40,856,914	50,642,059	56,457,693	56,434,357	53,513,196	63,952,314	77,332,982	93,203,970
2,457	415,140	1,529,399	4,836,741	5,785,858	5,957,136	5,846,997	7,807,202	10,646,127	14,933,997
65,577,853	58,903,274	64,738,641	69,157,122	66,779,781	58,599,282	54,820,235	61,053,892	70,857,562	82,326,224
651,751,082	647,391,200	668,854,417	638,150,060	669,736,166	649,725,214	714,147,613	685,162,160	764,492,181	948,565,825
4,20,630	5,611,740	5,694,368	6,388,605	6,781,762	6,670,012	6,272,888	6,174,174	6,295,323	6,237,739
749,157,160	745,569,156	781,673,739	769,174,587	805,541,260	777,386,001	834,600,929	824,149,742	929,624,175	1,145,267,755
723,697,267	602,438,379	652,047,341	727,601,927	684,979,843	387,122,111	536,534,804	578,473,106	749,239,514	743,409,805
1,472,854,427	1,348,007,535	1,433,721,080	1,496,776,514	1,490,521,103	1,164,508,112	1,371,135,733	1,402,622,848	1,678,863,689	1,888,677,560
27,495,169	21,521,634	22,575,732	27,653,810	33,024,756	24,778,970	22,967,032	23,884,897	26,527,630	30,930,782
258,793,523	216,648,384	258,953,310	258,905,958	243,991,900	229,784,164	218,959,817	241,994,206	267,057,986	314,777,994
					134,538,400	137,462,110	156,655,494	77,184,551	193,457,782
1,759,143,119	1,586,177,553	1,715,250,122	1,783,336,282	1,767,537,759	1,553,609,646	1,750,524,692	1,825,157,445	2,049,633,856	1,427,304,118
343,180	331,200	370,000	412,800	402,810	389,120	390,720	391,340	408,120	491,900
226,900	245,580	260,746	268,774	264,477	254,372	253,300	288,080	293,800	337,510
65,530	69,883	73,373	74,928	73,199	68,883	69,368	75,416	79,882	83,514
75	1,532	2,735	6,133	6,212	5,728	7,308	8,441	10,088	15,562
22,290	23,777	26,337	25,978	24,462	22,987	22,187	22,991	23,350	23,823
463	558	700	773	632	537	650	663	688	665
375	493	512	199	170	164	145	139	129	123
88,733	96,243	103,657	108,011	104,675	98,299	99,658	107,650	114,137	123,687
15	18	17	51	51	51	51	49	50	52
88,748	96,261	103,674	108,062	104,726	98,350	99,709	107,699	114,187	123,739

DEFENDANTS' EXHIBIT No. 2

[fol. 4067]

Alabama Power Company

Electric Revenue and Expense

9 Months Ending September 30, 1937

Electric Revenue:

Residential	\$2,443,249.84
Rural	638,465.24
Commercial	2,202,629.76
Industrial	5,776,695.39
Street Lighting	227,780.18

Sub-Total	11,288,820.41
Other Utilities	3,175,394.19

Total	14,464,214.60
Miscellaneous Revenue	442,109.76

Total Electric Revenue	14,906,324.36
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Electric Operating Expense:

Production	1,270,906.75
Transmission	358,839.80
Distribution	828,794.61
Utilization	—
Commercial	293,211.18
New Business	571,635.60
General	1,019,692.85
Uncollectible Bills	36,000.00
Taxes	2,189,733.05

Total Operating Expense	6,568,813.84
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Electric Gross Income	\$8,337,510.52
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DEFENDANTS' EXHIBIT No. 2

[fol. 4068] Alabama Power Company
 Energy Sales, Output and Active Meters
 9 Months Ending September 30, 1937

Energy Sales:

Residential	81,381,177
Rural	14,871,488
Commercial	69,615,915
Industrial	743,070,937
Street Lighting	5,272,433

Sub-Total	914,211,950
Other Utilities	675,516,940

Total	1,589,728,890
Company Use	27,048,647
Lost & Unaccounted for	240,580,459
Exchange & Storage	128,216,587

Total Output	1,985,574,583
System Peak-Total	505,900
System Peak-In Alabama	343,520

Customers Active Meters (End of Period):

Residential	88,334
Rural	21,245
Commercial	24,276
Industrial	745
Street Lighting	105

Sub-Total	134,705
Other Utilities	54

Total	134,759
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(Here follow two pasters, side folios 4069 and 4070)

DEFENDANTS' EXHIBIT M

Birmingham Electric Company

[fol. 4009]

12 Mos. Ending
July 1937

	Amount	Pct. in- crease or decrease*	1936	1935	1934
M. K.w.h. Sold:					
Residential.....	41,204	21.38	36,874	30,599	26,127
Commercial.....	51,938	17.50	47,996	40,731	36,303
Industrial.....	126,834	25.59	116,429	84,780	82,832
Farm.....	172	1.18	170	161	157
Street Ltg.....	2,911	2.07	2,870	2,839	2,719
Other Govt. & Mun.....	3,844	3.25	3,775	3,631	3,150
Sub Total.....	226,903	22.07	208,114	162,741	151,288
Other Utilities					
Interchange					
Interdepartmental.....	34,019	8.47†	35,645	36,712	36,930
Grand Total.....	260,922	16.98	243,759	199,453	188,218
Number of Customers:					
Residential.....	58,783	8.89	56,149	51,306	50,879
Commercial.....	8,160	3.92	8,023	7,802	7,728
Industrial.....	440	16.71	398	344	333
Farm.....	30	6.25†	27	27	19
Street Ltg.....	6	.....	6	6	6
Other Govt. & Mun.....	373	7.49	368	351	313
Grand Total.....	67,792	8.30	64,971	59,836	59,278
Company Uses.....	1,795	8.66	1,756	1,483	1,332
Lost & Unaccounted for M. K.w.h.....	34,948	7.43	84,042	29,888	25,610
Total Output M. K.w.h.....	297,665	15.72*	279,557	230,824	215,160
System Peak Demand—K.w.—Gross.....	56,198	12.67	52,588	45,712	42,310
Net.....	56,198	12.67	52,588	45,712	42,310

* Per cent increase or decrease represents increase or decrease over 12 Months Ending July 31, 1936.

† Red in copy.

Part No. 2

Company

	1933	1932	1931	1930	1929	1928	1927
7	21,760	24,032					
3	33,750	37,024					
2	74,084	70,074					
7	187	187					
9	1,904	2,716					
0	2,753	3,009					
8	134,438	137,042	186,236	205,095	211,962	215,002	202,467
0	33,270	34,674	37,808	43,072	46,548	48,330	47,971
8	167,708	171,716	224,044	248,167	258,510	263,332	250,438
9	48,448	43,511					
8	7,058	6,954					
3	926	322					
9	31	37					
6	6	6					
3	275	250					
8	56,744	51,080	57,535	59,105	65,223	64,507	58,855
2	1,122	1,088	1,112	951	1,271	1,336	1,211
0	27,182	25,478	27,067	28,320	33,376	34,167	37,424
0	196,012	198,282	252,223	277,438	293,157	298,835	289,073
0	37,983	41,200	47,200	52,430	54,820	53,720	53,811
0	37,983	41,200	47,200	52,430	54,820	53,720	53,811

Not Available According
to Present Classification

Not Available According
to Present Classification

4010B

DEFENDANTS' EXHIBIT No. 2

Birmingham Electric Company

[fol. 4070]

		12 Mos. Ending July 1937											
		Amount	Pct. in- crease or decrease*	1936	1935	1934	1933	1932	1931	1930	1929	1928	1927
Operating Revenues:													
Residential.....	1,611,491	7.99	1,545,486	1,451,375	1,364,453	1,288,233	1,539,834						
Commercial.....	1,527,542	12.07	1,439,268	1,300,834	1,204,909	1,137,241	1,319,362						
Industrial.....	1,364,268	19.79	1,251,911	1,013,991	986,364	893,273	953,191			Not Available According to Present Classification			
Farm.....	5,480	4.43†	5,784	5,265	5,302	6,270	6,469						
Street Lighting.....	105,986	1.11	104,465	103,985	115,343	138,777	173,224						
Other Govt. & Mun.....	102,715	3.70	99,781	100,532	90,602	80,654	86,552						
Sub Total.....	4,717,482	12.22	4,446,695	3,975,982	3,766,973	3,544,448	4,078,632	4,845,137	5,183,973	5,148,507	4,945,902	4,435,842	
Other Utilities													
Interchange.....													
Interdepartmental Sales.....	157,420	5.51†	155,617	178,215	180,947	190,237	241,518	243,456	274,114	288,039	297,667	**	
*** Misc. Revenues.....	46,778	.....	13,214†	23,727	20,113	5,795	18,760†	17,401	4,918†	17,579	33,428	4,685	
Sub Total.....	204,198	23.72	142,403	201,942	201,060	196,032	222,758	260,857	269,196	305,618	331,095	4,685	
Grand Total.....	4,921,680	12.65	4,589,098	4,177,924	3,968,033	3,740,480	4,301,390	5,105,994	5,453,169	5,454,125	5,276,997	4,440,527	
Operating Expenses:													
Production.....	1,674,952	14.12	1,557,315	1,407,620	1,333,429	1,248,399	1,385,303	1,620,028	1,765,230	1,815,239	1,833,666	1,488,899	
Transmission.....	15,748	3.61	16,650	14,465	14,059	14,103	14,573	16,010	17,839	18,775	18,631	22,790	
Distribution.....	263,152	12.00	193,773	181,203	173,220	130,370	135,317	139,886	152,304	162,661	165,186	171,203	
Utilization.....			51,606	48,902	49,569	39,685	42,705	43,657	49,705	48,248	41,805	36,926	
Commercial.....	186,325	7.36	179,219	175,810	180,700	164,120	170,048	186,827	212,477	223,357	176,605	138,276	
New Business.....	242,132	14.95	219,300	205,199	184,671	82,271	75,835	114,193	167,229	106,991	58,772	39,880	
General.....	352,564	1.92	359,911	337,199	335,255	350,346	321,081	347,661	349,599	262,764	330,030	304,650	
Taxes.....	631,669	17.01	549,019	526,996	517,785	510,749	491,197	553,718	593,174	593,192	375,810	397,327	
Total.....	3,366,542	12.67	3,126,793	2,897,394	2,788,698	2,540,043	2,636,059	3,021,980	3,307,557	3,231,227	3,000,514	2,599,951	
Net Operating Rev.....	1,555,138	12.61	1,462,305	1,280,530	1,179,335	1,200,437	1,665,331	2,084,014	2,145,612	2,222,898	2,276,483	1,840,576	

* Per cent increase or decrease represents increase or decrease over 12 Months Ending July 31, 1936.

** Interdepartmental sales handled as operating expense elimination prior to 1928.

*** Merchandise and Jobbing Net included prior to January 1, 1937. Forfeited Discounts included since January 1, 1937; prior to that date included in classes of revenue on apportionment basis.

† Red in copy.

DEFENDANTS' EXHIBIT No. 2

{fol. 4071}

Kentucky-Tennessee Light & Power Company

Operating Revenue	1934	1936
Domestic	\$208,178.22	\$303,811.89
Commercial	152,368.14	228,362.65
Power	106,084.22	155,131.46
Electric companies—non-affiliated	6,454.65	8,477.88
Street Lighting	21,566.16	24,503.05
Miscellaneous municipalities	20,860.43	27,733.79
Total from Energy Sales	515,511.82	748,020.72
Miscellaneous Elec. Rev.	1,747.62	15,895.15
Total Operating Revenue	517,259.44	763,915.87
Operating Expenses:		
Production	165,065.91	244,116.62
Transmission	15,462.52	20,416.95
Distribution	41,705.44	62,212.51
Utilization	4,561.27	6,563.21
Commercial	33,532.30	43,254.42
New Business	23,749.84	59,499.14
General	76,972.04	122,875.73
Total	361,049.32	558,938.58
Net Operating Revenue	156,210.12	204,977.29
K.w.h. Sold—Total	11,266,500	18,242,943
K.w.h. Output	14,807,774	23,248,730

Note: 1936 data from Company's report, no photostatic copy available.

4013

DEFENDANTS' EXHIBIT No. 2

Memphis Power & Light Company

[fol. 4072]

Electric	1930	1931	1932	1933	1934	1935	1936	1937**
Operating Revenues:								
Residential.....	\$1,483,195.03	\$1,501,870.48	\$1,470,824.76	\$1,270,956.82	\$1,250,229.63	\$1,369,055.23	\$1,512,210.83	\$1,608,723.22
Commercial.....	2,158,360.96	2,036,372.60	1,854,665.23	1,675,569.58	1,680,811.25	1,810,111.39	2,001,865.16	2,126,038.91
Industrial.....	728,045.36	682,254.33	581,855.10	543,363.12	648,642.00	640,294.54	728,324.93	856,895.39
Farm.....	16,795.90	13,956.87	13,287.29	11,082.71	11,504.53	11,885.65	30,920.19	42,350.29
Government & Municipal.....	274,785.69	328,906.37	320,666.73	289,251.04	291,209.68	304,991.60	314,664.47	331,836.95
Public Utilities.....	217,297.18	216,407.83	200,871.41	189,375.25	185,748.92	180,644.61	180,608.44	254,838.26
Sub-total.....	4,878,480.12	4,779,768.48	4,442,170.52	3,979,598.52	4,068,146.01	4,316,983.02	4,768,594.02	5,220,683.02
Interchange.....	86,052.04	71,299.94	60,588.85	54,771.29	55,383.92	57,254.28	79,398.31	15,518.52
Interdepartmental.....	25,859.28	25,404.20	25,640.80	25,304.52	25,270.02	26,115.44		
Total Energy Sales.....	4,990,391.44	4,876,472.62	4,528,400.17	4,059,674.33	4,148,799.95	4,400,352.74	4,847,992.33	5,236,201.54
Miscellaneous Revenues.....	5,831.13	8,300.88	7,668.24	6,616.94	7,552.63	11,143.79	8,008.03	36,556.25
Merchandise & Jobbing—Net.....	35,217.43†	14,795.23†	15,696.33†	11,952.85	9,396.54	3,737.83	12,611.28	4,288.07
Total Operating Revenues.....	\$4,961,005.14	\$4,869,978.27	\$4,520,372.08	\$4,078,244.12	\$4,165,749.12	\$4,415,234.36	\$4,868,611.64	\$5,277,045.86
Operating Expenses:								
Production & Transmission.....	\$816,161.01	\$819,681.25	\$817,829.07	\$722,595.87	\$691,933.33	\$690,429.75	\$768,298.77	\$831,200.17
Distribution.....	365,707.33	297,397.38	247,149.08	195,623.15	209,396.30	236,785.35	260,282.56	310,863.16
Utilization.....	99,009.71	92,797.00	107,745.56	104,876.22	103,706.30	109,753.10	108,944.88	99,746.00
Customers.....	147,885.34	165,138.74	157,373.17	164,209.31	146,879.54	135,609.30	141,900.97	141,075.86
New Business.....	66,697.86	97,263.27	90,125.78	89,707.98	144,496.27	147,877.50	181,329.63	177,491.26
General.....	363,573.73	384,360.68	358,094.85	321,789.84	362,355.35	368,594.63	421,870.11	408,801.52
Total Operating Expenses.....	1,859,034.98	1,856,638.32	1,778,317.51	1,598,802.37	1,659,767.09	1,689,049.63	1,882,626.92	1,969,177.97
Net Operating Revenue.....	3,101,970.16	3,013,339.95	2,742,054.57	2,479,441.75	2,506,982.03	2,726,184.73	2,985,984.72	3,307,867.89
Taxes.....	583,051.62	601,490.29	559,812.55	515,119.71	619,065.93	692,065.54	799,988.33	989,112.64
Gross Operating Income.....	\$2,518,918.54	\$2,411,849.66	\$2,182,242.02	\$1,964,322.04	\$1,887,916.10	\$2,034,119.19	\$2,185,996.39	\$2,318,755.25
Average No. of Customers:								
Residential.....		38,086	37,187	36,493	40,350	41,977	43,452	44,958
Commercial.....		9,319	9,179	9,168	8,981	8,996	9,201	9,359
Industrial.....		185	189	190	154	135	133	142
Farm.....		385	347	353	369	377	762	1,019
Government & Municipal.....		110	154	142	243	289	297	318
Public Utilities.....		3	3	3	3	3	2	4
Interchange.....		2	2	2	2	2	2	
Total Customers.....		47,980	47,061	46,351	50,102	51,779	53,849	55,800
Total K.w.h. Sold:								
Residential.....	21,969,960	22,585,264	22,993,638	22,114*	24,714*	27,773*	31,317*	33,936*
Commercial.....	49,973,194	47,419,611	43,639,111	40,842	44,861	48,777	55,044	58,621
Industrial.....	43,939,731	42,280,889	34,520,348	34,369	44,752	43,438	51,783	61,841
Farm.....	228,652	216,222	215,203	199	244	261	696	938
Government & Municipal.....	7,404,718	8,708,119	8,817,305	8,256	7,648	8,029	8,485	9,421
Public Utility.....	32,442,704	29,236,573	26,915,072	25,250	27,995	28,028	28,371	44,181
Interchange.....	13,699,440	14,812,920	11,331,720	9,641	11,059	12,142	18,071	3,448
Interdepartmental.....	1,191,188	1,275,035	1,221,314	1,190	1,234	1,374		
Total K.w.h. Sold.....	170,849,586	166,534,713	149,653,711	141,861	162,507	169,822	193,767	212,386
Aver. Consumption per Res. Customer.....	573.01	593.7	618.3	.606	.612	.662	.721	.755
Aver. Consumption per Farm Customer.....	699.24	643.4	620.1					

* M K.w.h.

** 12 months ending July.

† Red in copy.

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DEFENDANTS' EXHIBIT No. 2

Tennessee Public Service Company

[fol. 4073]

	1930	1931	1932	1933	1934	1935	1936	12 Months through July 1937
Operating Revenues:								
Residential.....	\$180,065.63	\$807,337.90	\$790,734.85	\$711,219.74	\$701,043.88	\$724,781.93	\$842,081.22	\$912,380.58
Commercial.....	174,501.69	773,855.57	708,325.18	656,651.74	628,824.99	647,195.19	721,082.75	779,453.71
Industrial.....	190,780.15	874,968.05	709,247.83	651,293.60	630,614.02	689,093.65	817,366.38	912,116.27
Farm.....	8,646.76	34,449.81	36,993.30	31,934.70	24,466.46	23,011.39	42,068.05	51,344.78
Government & Municipal.....	35,622.51	155,831.75	158,793.72	161,242.87	173,354.90	182,794.23	200,769.24	206,964.05
Public Utilities.....				15,829.30	17,843.24	18,897.23	20,911.76	22,702.96
Sub-Total.....	589,616.74	2,646,443.08	2,404,094.88	2,228,171.95	2,176,147.49	2,285,773.62	2,644,279.40	2,884,962.35
Interchange.....	10,545.00	13,178.77	15,208.97					
Interdepartmental.....	10,772.69	53,471.83	47,364.21	42,927.67	43,943.49	37,671.10	34,997.19	33,254.82
Total Energy Sales.....	610,934.43	2,713,093.68	2,466,668.06	2,271,099.62	2,220,090.98	2,323,444.72	2,679,276.59	2,918,217.17
Miscellaneous Revenues.....	16,284.17	43,990.16	20,351.50	20,448.37	14,847.49	15,145.70	17,356.23	18,522.51
Merchandise & Jobbing—Net.....	2,845.11†	16,293.00†	13,086.01†	3,642.62†	4,019.54†	2,605.97	3,056.15	1,913.41
Total.....	624,373.49	2,740,790.84	2,473,933.55	2,287,905.37	2,230,918.93	2,341,196.39	2,699,688.97	2,938,653.09
Operating Expenses:								
Production & Transmission.....	146,968.47	727,885.29	627,694.14	611,213.78	630,442.98	698,304.43	826,249.43	929,486.38
Distribution.....	35,390.78	127,713.33	122,423.94	135,738.52	108,604.82	122,964.29	138,813.76	132,835.19
Utilization.....	5,144.54	23,913.44	24,210.14	24,873.87	23,770.12	25,332.62	24,950.63	25,922.65
Customers.....	21,772.51	80,457.29	81,749.18	90,698.40	100,087.35	92,545.27	92,544.83	92,897.14
New Business.....	7,257.14	43,205.77	52,272.70	52,219.03	47,006.17	91,492.74	135,961.32	129,263.91
General.....	40,706.41	193,845.35	185,723.88	205,576.62	288,321.19	366,810.32	288,052.85	272,733.89
Total.....	257,239.85	1,197,020.47	1,094,073.98	1,120,320.22	1,198,232.63	1,297,449.67	1,506,572.82	1,583,139.16
Net Revenue from Operation before Taxes.....	367,133.64	1,543,770.37	1,379,859.57	1,167,585.15	1,032,686.30	1,043,746.72	1,193,116.15	1,355,513.93
Taxes.....		269,010.79	214,096.45	229,417.04	313,889.13	331,113.30	363,815.03	421,154.77
Net Revenue from Operation.....	\$367,133.64	\$1,274,759.58	\$1,165,763.12	\$938,168.11	\$718,797.17	\$712,633.42	\$829,301.12	\$934,359.16
Average No. of Customers:								
Residential.....	21,303	21,269	20,726	19,989	21,767	22,953	24,707	25,974
Commercial.....	3,428	3,436	3,349	3,260	3,343	3,479	3,605	3,711
Industrial.....	261	259	244	215	220	231	304	353
Farm.....	384	471	503	480	456	513	1,021	1,275
Government & Municipal.....	165	158	170	183	197	216	242	252
Public Utilities.....				1	1	1	1	1
Interchange.....	2	1	1					
Total.....	25,543	25,594	24,993	24,128	25,984	27,393	29,880	31,566
Total K.w.h. Sold:								
Residential.....	2,551,239	11,693,766	11,748,567	11,409,000	13,550,000	16,887,000	21,159,000	23,660,000
Commercial.....	3,131,038	15,343,092	14,160,338	13,105,000	15,306,000	18,546,000	22,600,000	25,563,000
Industrial.....	12,447,191	60,971,960	44,283,375	43,270,000	43,593,000	50,948,000	61,843,000	72,736,000
Farm.....	128,336	577,568	634,841	563,000	545,000	651,000	1,214,000	1,528,000
Government & Municipal.....	790,748	2,911,455	3,122,210	3,237,000	4,093,000	4,787,000	5,423,000	5,503,000
Public Utilities.....				1,223,000	1,424,000	1,530,000	1,731,000	1,910,000
Interchange.....	694,500	957,877	1,160,897					
Interdepartmental.....	1,600,853	8,090,444	7,070,747	6,341,000	6,804,000	6,108,000	5,762,000	5,582,000
Total.....	21,343,905	100,546,162	82,180,975	79,148,000	85,315,000	99,457,000	119,732,000	136,482,000

Note: Tennessee Public Service Company acquired Knoxville Power and Light Company as of November 1, 1930.

† Red in copy.

DEFENDANTS' EXHIBIT No. 2

Mississippi Power Company
Comparative Income Statement

[fol. 4074]

	7 Months Ended July 1937		1936		1935		1934		1933		1932	
	Amount	% Inc.	Amount	% Inc. over 1935	Amount	% Inc. over 1934	Amount	% Inc. over 1933	Amount	% Inc. over 1932	Amount	% Inc. over 1931
Operating Revenue—Electric:												
Residential.....	630,675.50	15.80	983,853.34	12.27	876,294.06	7.87	812,390.86	6.26†	866,632.14	8.50†	947,147.64	5.41†
Rural.....							48,094.99	11.08†	54,086.14	15.75†	64,192.82	9.20†
Commercial.....	767,151.40	11.68	1,231,524.40	9.08	1,129,032.53	4.59	1,079,452.01	5.30	1,025,024.11	8.01†	1,114,312.59	12.20†
Industrial (Note D).....	360,170.83	25.90	656,248.40	12.67	445,899.92	1.07	441,193.63	11.51†	498,606.54	5.73†	528,924.63	8.50†
Street Lighting.....	83,314.71	2.16	140,475.58	3.82	134,014.49	1.09	132,568.63	6.80†	142,239.16	19.54†	176,794.18	16.55†
Sub-Total.....	1,841,312.44	15.14	2,921,101.72	12.99	2,585,241.00	2.85	2,513,700.12	2.82	2,586,588.09	8.64†	2,831,371.86	9.55†
Other Utilities.....	30,925.88	4.16	58,364.23	3.67	56,299.28	5.43	53,402.26	21.32†	67,874.40	5.38†	71,729.93	11.73†
Misc'l. Electric Revenue.....	35,638.05	35.30†	79,976.23	1.53†	94,609.13	36.50	69,315.65	25.19	55,366.05	93.99	28,540.03	20.36†
Total Electric Revenue.....	1,907,876.37	13.30	3,059,442.18	11.82	2,736,149.41	3.78	2,636,418.03	2.71†	2,709,828.54	7.57†	2,931,641.82	9.75†
Operating Expenses—Electric:												
Generation.....	113,252.38	15.04	169,147.08	18.71	142,483.42	.54	141,716.55	3.54†	146,921.45	13.73†	170,293.66	439.85
Purchased Energy.....	359,316.41	10.05	573,578.32	9.09	525,775.07	4.20	504,575.56	6.32†	538,633.93	2.99†	555,209.07	30.34†
Transmission.....	35,440.38	17.16	60,745.52	7.73	56,388.92	3.18†	58,238.80	13.93†	67,662.51	4.85†	71,112.07	19.89†
Production & Trans.—General (Note A).....		100.00†	6,726.19	6.24	6,331.17	17.26	5,399.08	241.43	1,581.28	38.24†	2,560.67	20.82†
Total Production & Transm.....	508,009.17	10.64	810,197.11	10.84	730,978.58	2.96	709,929.99	5.94†	754,798.17	5.55†	799,175.47	13.18†
Distribution.....	149,351.91	59.14	170,196.27	1.38	167,887.27	2.40†	172,019.31	6.18†	182,352.63	4.45†	191,898.79	7.75
Utilization.....		100.00†	58,669.55	5.21	55,766.55	8.30	51,490.78	4.70	49,178.07	8.48†	53,739.37	.23†
Commercial (Note B).....	87,304.34	127.63	69,240.90	7.36	64,493.44	6.23	60,709.70	6.13†	64,673.67	25.54†	86,853.24	28.77†
New Business.....	64,538.58	25.65	105,875.41	44.61	73,213.35	39.22	52,582.12	5.58	49,803.33	4.12	47,830.85	30.50†
General.....	159,546.45	21.29†	353,227.87	5.32†	373,072.02	5.27	354,398.51	6.26	333,519.23	4.88†	350,626.86	3.50†
Taxes—Elec. (Note C).....	228,981.89	15.74	396,473.72	19.55	331,652.98	2.99†	341,859.91	3.48	330,353.52	3.44	318,979.95	11.25
Total Oper. Expenses & Taxes.....	1,197,732.34	11.22	1,963,880.83	9.28	1,797,064.19	3.10	1,742,990.32	1.28†	1,765,678.62	4.51†	1,849,104.53	7.24†
Electric Gross Income.....	710,144.03	1.70	1,095,561.35	16.66	939,085.22	5.11	893,427.71	5.37†	944,149.92	12.78†	1,082,537.29	13.74†

Note A—Less Expense Transferred to Bus & Railway Departments.

Note B—Commercial Expense in 1937 is named Customers Accounting and does not include same expenses as in prior years.

Note C—Part of Taxes in 1937 distributed to functional accounts.

Note D—Prior to 1930 Industrial Revenue was included with Commercial.

† Red in copy.

IBIT No. 2

Company
e Statement

1932			1931		1930		1929		1928		1927	
% Inc. over 1932	Amount	% Inc. over 1931	Amount	% Inc. over 1930	Amount	% Inc. over 1929	Amount	% Inc. over 1928	Amount	% Inc. over 1927	Amount	% Inc. over 1926
8.50†	947,147.64	5.41†	1,001,342.09	2.71	974,961.70	9.56	889,877.25	20.46	738,755.24	23.13	599,995.30	26.06
15.75†	64,192.82	9.20†	70,698.09	18.32	59,775.99	47.64	40,482.60	189.25	13,995.41	4,853.98	282.51	100.00
8.01†	1,114,312.59	12.20†	1,269,229.94	7.37†	1,370,248.13	33.94†	2,074,193.44	21.66	1,704,825.50	22.19	1,395,208.75	23.33
5.73†	528,924.63	8.50†	578,057.51	7.43†	624,434.01	100.00						
19.54†	176,794.18	16.55†	211,847.31	1.83†	215,805.94	.73	214,239.56	17.27	182,696.33	26.61	144,288.91	18.40
8.64†	2,831,371.86	9.55†	3,131,171.94	3.51†	3,245,225.77	.82	3,218,792.85	21.91	2,640,272.48	23.39	2,139,775.47	23.75
5.38†	71,729.93	11.73†	81,264.95	11.65†	91,979.80	80.18	51,049.08	15.90	44,047.13	11.21	39,609.04	1,485.20
93.99	28,540.03	20.36†	35,836.50	12.42†	40,917.19	523.88	6,558.48	32.04†	9,651.53	28.44	7,512.75	404.14†
7.57†	2,931,641.82	9.75†	3,248,273.39	3.84†	3,378,122.76	3.10	3,276,400.41	21.62	2,693,971.14	23.19	2,186,897.26	26.48
13.73†	170,293.66	439.85	31,544.01	61.58†	82,103.33	24.59†	108,884.29	24.75†	144,688.63	35.05†	222,768.44	38.72†
2.99†	555,209.07	30.34†	796,976.95	.75	791,066.91	4.45	757,396.26	27.98	591,829.10	31.28	450,799.45	195.09
4.85†	71,112.07	19.89†	88,766.83	12.97†	101,993.31	.91†	102,926.22	9.16	94,288.64	73.05	54,486.60	91.90
38.24†	2,560.67	20.82†	3,233.95	142.41	7,625.20†	54.80	16,872.98†	13.89	19,594.34†	15.98†	7,542.76†	37.62
5.55†	799,175.47	13.18†	920,521.74	4.86†	967,538.35	1.60	552,333.79	17.40	811,212.03	12.58	720,511.73	35.28
4.45†	191,898.79	7.75	178,130.17	28.25	138,783.71	2.58	138,292.74	16.51	116,125.81	22.64	94,696.32	22.94
8.48†	53,739.37	.23†	53,863.99	151.41	21,424.25	54.99†	47,594.52	19.89	39,698.25	15.82	34,274.88	41.71
25.54†	86,853.24	28.77†	121,935.16	7.75†	132,177.32	15.38	14,552.62	24.51	92,006.85	28.64	71,523.31	37.93
4.12	47,830.85	30.50†	68,819.85	111.63	32,518.69	47.40	22,060.64	54.99	14,233.22	48.90	9,559.06	3.27
4.88†	350,626.86	3.50†	363,362.23	14.42†	424,597.58	28.08	331,514.31	35.75	244,211.28	8.69	224,675.71	10.52
3.44	318,979.95	11.25	286,710.14	32.10†	422,295.77	31.88	320,207.57	70.32	187,997.73	21.90	154,217.25	1.83
4.51†	1,849,104.53	7.24†	1,993,343.28	6.82†	2,139,335.67	11.22	1,923,556.19	27.77	1,505,485.17	14.97	1,309,448.26	25.84
12.78†	1,082,537.29	13.74†	1,254,930.11	1.30	1,238,787.09	8.43†	1,352,844.22	13.83	1,188,485.97	35.45	877,449.00	27.44

DEFENDANTS' EXHIBIT No. 2

Mississippi Power Company

Operating Statistics

[fol. 4075]

	7 Months Ending July 1937		1936		1935		1934		1933		1932	
	Amount	% Inc. over 7 Mo. 1936	Amount	% Inc. over 1935	Amount	% Inc. over 1934	Amount	% Inc. over 1933	Amount	% Inc. over 1932	Amount	% Inc. over 1931
Number of Customers:												
Residential.....	29,667	9.16	27,715	7.77	25,716	.73†	25,906	2.20	25,348	4.15†	26,445	5.35
Rural.....								100.00†	988	8.77†	1,083	9.30
Commercial.....	9,048	5.87	8,705	7.05	8,132	.18†	8,147	.24†	8,167	.70	8,110	5.75
Industrial (Note A).....	97	12.79	92		92	23.97†	121	15.97†	144	1.37†	146	
Street Lighting.....	121	2.42†	124	.81	123	5.38†	130	7.80†	141	4.73†	148	
Sub Total.....	38,935	8.35	36,636	7.55	34,063	.70†	34,304	1.39†	34,788	3.18†	35,932	5.52
Other Utilities.....	29	3.33†	30	6.25†	32		32	5.88†	34	6.25	32	10.34
Total.....	38,962	8.34	36,668	7.54	34,095	.70†	34,336	1.40†	34,822	3.18†	35,964	5.51
M KWH Sold:												
Residential.....	13,826	21.15	21,004	24.78	16,833	9.44	15,381	9.29	14,073	3.66†	15,262	5.12
Rural.....								100.00†	725	17.61†	880	2.98
Commercial.....	19,264	20.97	29,711	18.23	25,129	9.63	22,922	8.54	21,119	3.61†	21,910	13.10
Industrials (Note A).....	44,248	24.74	64,216	31.36	48,884	15.75	42,234	3.95	40,628	9.27	37,182	18.05
Street Lighting.....	1,446	9.46	2,322	5.98	2,191	.83	2,173	5.64†	2,303	20.94	2,913	11.65
Sub Total.....	78,784	22.85	117,253	26.03	93,037	12.49	82,710	4.90	78,848	.90	78,147	14.01
Other Utilities.....	2,289	10.47	3,908	12.78	3,465	15.15	3,009	9.94†	3,341	5.91†	3,551	9.96
Grand Total.....	81,073	22.46	121,161	25.55	96,502	12.58	85,719	4.29	82,189	.60	81,698	13.84
Co. Use & Transferred to Other Oper.....	582	31.38	839	22.30	686	11.60†	776	34.07†	1,177	9.88†	1,306	7.31
Lost & Unaccounted for M KWH.....	16,236	7.89	26,141	12.92	23,149	10.54	20,941	1.39	20,653	.33†	20,722	7.07
Total Output M KWH.....	97,891	19.83	148,141	23.11	120,337	12.01	107,436	3.28	104,019	.28	103,726	12.49
System Peak Demand KW Gross.....	30,698	8.48	32,581	12.07	29,071	15.22	25,230	13.99	22,134	8.16†	24,100	5.52
System Peak Demand KW Net.....	30,688	17.19	29,455	11.69	26,373	14.62	23,010	4.46	22,027	8.19†	23,993	5.94

Note A—Prior to 1930 Industrial Customers & Sale of KWH was included with Commercial.

† Red in copy.

HIBIT No. 2

of Company
Statistics

1932			1931		1930		1929		1928		1927	
% Inc. over 1932	Amount	% Inc. over 1931	Amount	% Inc. over 1930	Amount	% Inc. over 1929	Amount	% Inc. over 1928	Amount	% Inc. over 1927	Amount	% Inc. over 1926
4.15†	26,445	5.35†	27,939	.30†	28,023	4.14	26,909	12.78	23,860	19.90	19,900	23.20
8.77†	1,083	9.30†	1,194	7.57	1,110	38.75	800	197.40	269	417.31	52	100.00
.70	8,110	5.75†	8,605	.26	8,583	.01†	8,584	24.82	6,877	24.45	5,482	47.48
1.37†	146	.....	146	28.07	114	100.00	.....	.....	.....	.....	.....	.....
4.73†	148	.....	148	.68	147	1.38	145	145.76	59	68.57	35	52.17
3.18†	35,932	5.52†	38,032	.14	37,977	4.28	36,438	17.30	31,065	21.97	25,469	28.04
6.25	32	10.34	29	70.59	17	466.67	3	.....	3	.....	3	200.00
3.18†	35,964	5.51†	38,061	.18	37,994	4.26	36,441	17.29	31,068	21.97	25,472	28.05
3.66†	15,262	5.12†	16,086	9.62	14,674	26.46	11,604	28.32	9,043	27.89	7,071	88.06
17.61†	880	2.98†	907	27.75	710	97.77	359	189.52	124	4,003.00	3	100.00
3.61†	21,910	13.10†	25,213	3.53†	26,135	64.89†	74,430	30.53	57,020	26.65	45,020	64.88
9.27	37,182	18.05†	45,372	6.19	42,729	100.00	.....	.....	.....	.....	.....	.....
20.94	2,913	11.65†	3,297	2.57†	3,384	8.36†	3,123	23.78	2,523	17.62	2,145	7.09
.90	78,147	14.01†	90,875	3.70	87,632	2.10†	89,516	30.28	68,710	26.68	54,239	64.02
5.91†	3,551	9.96†	3,944	19.15†	4,878	74.78	2,791	23.17	2,266	13.55	1,995	633.46
.60	81,698	13.84†	94,819	2.50	92,510	.22	92,307	30.05	70,976	26.22	56,234	68.67
9.88†	1,306	7.31†	1,409	1.47†	1,430	31.15†	2,077	2.42	2,028	46.70†	3,805	11.49
.33†	20,722	7.07†	22,298	2.78	21,695	5.86	20,494	9.65	18,691	21.37	15,400	42.78
.28	103,726	12.49†	118,526	2.50	115,635	.66	114,878	25.28	91,695	21.55	75,439	58.69
8.16†	24,100	5.52†	25,508	8.61†	27,912	.....	Not Available	.....	Not Available	.....	Not Available	.....
8.19†	23,993	5.94†	15,508	8.61†	27,912	.....	Not Available	.....	Not Available	.....	Not Available	.....

4017

DEFENDANTS' EXHIBIT No. 2

Mississippi Power & Light Company

(fol 4076)

	12 Mos. ending August, 1937	1936	1935	1934	1933	1932	1931	1930	1929	1928	1927
Operating Revenues—Electric:											
Residential.....	\$1,368,366	\$1,204,422	\$1,052,474	\$1,064,692	\$1,004,883	\$1,055,553	\$1,101,602	\$1,049,445	\$874,788	\$666,072	\$516,538
Commercial.....	1,322,637	1,196,227	1,042,909	1,082,139	998,060	1,104,314	1,275,050	1,382,003	971,238	838,560	727,373
Industrial.....	1,393,598	1,224,344	1,023,062	989,756	907,672	921,543	1,020,278	995,745	1,130,311	771,047	579,879
Farm.....	148,712	137,820	71,508	64,581	66,111	75,221	84,513	108,883			
Gov't. & Municipal.....	464,428	442,337	432,632	414,866	402,390	410,733	454,478	474,549	315,894	286,050	262,644
Sub-Total.....	4,697,741	4,205,150	3,622,585	3,616,033	3,379,115	3,567,364	3,935,921	4,101,626	3,292,231	2,561,730	2,066,434
Other Utilities.....	6,093	6,175	9,309	9,880	9,816	9,442	10,499	7,685	52,181	61,849	30,818
Interchange.....											
Miscellaneous.....	24,523	20,203	28,210	26,157	13,630	16,806†	36,882	61,161	51,868	49,953	55,148
Grand Total.....	4,728,357	4,231,528	3,660,104	3,652,070	3,402,561	3,560,000	3,983,302	4,079,472	3,396,280	2,673,532	2,172,400
Operating Expenses—Electric:											
Production.....	1,228,113	1,101,619	919,156	831,138	770,638	816,746	949,860	987,351	829,372	664,584	545,363
Transmission.....	86,786	90,434	73,537	75,105	69,946	69,839	85,982	120,955	111,721	76,758	25,772
Distribution.....	257,309	203,459	154,977	145,034	114,755	103,800	142,454	164,552	134,898	98,386	93,016
Utilization.....	35,975	27,135	34,007	28,015	28,530	28,157	35,184	44,322	27,727	33,610	26,488
Commercial.....	126,167	115,099	97,675	94,067	124,776	167,076	143,890	131,091	100,325	69,424	59,005
New Business.....	205,402	252,927	209,764	142,198	84,151	81,576	110,254	76,033	41,621	22,167	20,130
General.....	427,446	398,478	406,615	398,554	372,528	329,033	345,910	424,801	399,795	369,210	335,379
Taxes.....	564,464	478,540	383,159	444,324	392,741	412,953	438,157	474,893	371,314	274,528	103,347
Total.....	2,931,662	2,667,691	2,278,890	2,158,435	1,958,065	2,009,180	2,251,691	2,423,998	2,016,774	1,608,667	1,208,500
Net Operating Revenue—Electric.....	1,796,695	1,563,837	1,381,214	1,493,635	1,444,496	1,550,820	1,731,611	1,655,474	1,379,506	1,064,865	963,900
Gross Operating Income (All Depts.).....	\$6,610,286	\$5,941,216	\$5,038,455	\$4,812,938	\$4,403,546	\$4,591,181	\$4,999,535	\$5,066,573	\$4,124,286	\$3,218,871	\$2,638,310

† Red in copy.

Mississippi Power & Light Company

[fol. 4077]

[illegible]

DEFENDANTS' EXHIBIT No. 2

Tennessee Electric Power Company

	1930	1931	1932	1933	1934	1935	1936	12 Mos. to 7/31/37
Operating Revenues:								
Residential.....	\$3,135,380.07	\$3,274,979.71	\$3,268,792.05	\$3,044,131.30	\$2,913,569.93	\$3,422,441.49	\$3,849,786.92	\$4,174,022.19
Rural.....								
Commercial Lt. & Pr.....	3,052,589.92	3,003,637.07	2,670,156.49	2,530,856.22	2,540,786.56	2,728,666.55	3,081,033.90	3,274,634.35
Street Lighting.....	254,487.89	302,753.34	252,381.27	208,998.74	201,713.60	207,323.92	199,782.03	195,431.83
Industrial Power.....	4,137,013.64	3,641,840.62	2,974,281.91	3,077,153.76	3,563,931.82	3,877,241.53	4,424,145.06	4,742,795.37
Utility Corps.—Affiliated.....	50,354.27	231,409.00	15,000.00	15,302.40	208,825.60	149,370.20	63,251.70	47,986.74
Utility Corps.—Non-affiliated.....	705,054.38	257,358.18	91,728.02	82,327.82	91,460.00	128,262.22	212,218.86	212,229.77
Total Electric Sales.....	11,334,880.17	10,711,977.92	9,272,339.74	8,958,770.24	9,520,287.51	10,513,305.91	11,830,218.47	12,647,100.25
Miscellaneous Revenues.....	169,434.08	96,258.34	39,915.65	107,572.11	308,093.06	245,970.42	213,803.41	164,959.93
Total Electric Revenue.....	11,504,314.25	10,808,236.26	9,312,255.39	9,066,342.35	9,828,380.57	10,759,276.33	12,044,021.88	12,812,060.18
Operating Expenses:								
Production & Transmission.....	1,720,008.43	1,495,135.49	762,791.44	759,541.86	923,915.33	1,126,527.59	1,497,615.07	1,852,811.63
Distribution.....	471,549.03	448,458.39	389,862.80	374,660.16	514,584.56	596,995.94	760,918.79	*1,080,218.51
Utilization.....	146,971.22	133,692.08	128,576.39	145,678.31	186,593.80	187,954.34	184,755.25	.....
Commercial.....	306,836.77	282,107.18	248,935.82	235,242.24	248,567.04	280,311.12	293,804.44	378,117.37
New Business.....	240,684.81	241,657.06	210,675.25	284,840.96	536,200.76	681,961.02	779,496.50	706,071.07
General & Miscellaneous.....	834,560.30	582,321.52	683,880.71	661,765.83	765,776.44	860,937.63	933,839.61	924,577.15
Telephone Expense.....	2,703.77	2,530.42	.....	.....	.....	.....	.....	.....
Total Electric Expense.....	3,723,314.33	3,185,902.14	2,424,722.41	2,461,729.36	3,175,637.93	3,734,687.64	4,450,429.66	4,941,795.73
Net Operating Revenue.....	7,780,999.92	7,622,334.12	6,887,532.98	6,604,612.99	6,652,742.64	7,024,588.69	7,593,592.22	.....
Taxes.....	1,485,909.06	1,409,431.60	1,207,933.99	1,300,204.41	1,556,729.59	1,648,775.15	2,095,831.48	2,270,464.47
Gross Income.....	6,295,090.86	6,212,902.22	5,679,598.99	5,304,408.58	5,096,013.05	5,375,813.54	5,497,760.74	5,599,799.93
Number of Customers (Meters—Average No.):								
Residential.....		91,730	90,180	86,214	91,156	97,694	104,870	110,596
Rural.....								
Commercial Lt. & Pr.....		21,600	22,247	20,702	20,402	20,630	21,269	21,885
Street Lighting.....					90			
Industrial Power.....		2,773	936	760	733	738	706	606
Utility Corps.—Affiliated.....					1	1	1	1
Utility Corps.—Non-Affiliated.....					5	8	10	10
Other Meters.....			103	96	.....	.....	.....	.....
Total.....		116,103	113,466	107,772	112,387	119,071	126,856	133,098
KWH Sold:								
Residential.....	48,661,297	52,831,002	53,305,755	52,734,573	70,565,799	94,319,426	123,101,140	142,670,480
Commercial Lt. & Pr.....	93,598,665	58,815,541	54,905,079	55,510,613	67,433,885	81,437,222	98,295,064	106,953,866
Street Lighting.....	3,829,959	6,422,952	4,389,793	3,503,152	3,811,185	4,721,814	4,021,370	3,785,976
Industrial Power.....	326,510,640	309,274,010	234,721,302	266,677,888	330,770,521	367,988,257	446,871,399	493,389,080
Utility Corps.—Affiliated.....	13,647,690	115,187,850	1,368,200	6,151,200	59,412,800	22,822,600	24,095,848	16,463,370
Utility Corps.—Non-Affiliated.....	98,948,454	43,306,883	13,940,685	6,692,200	7,313,841	10,448,100	30,844,005	30,282,500
Total.....	585,196,705	585,838,238	362,636,814	391,269,626	539,308,031	581,737,419	727,228,826	793,545,272

* Under classification of Accounts adopted by Federal Power Commission January 1, 1937, no group was provided for Utilization.
In twelve (12) months, ending 7/31/37, Utilization is included under Distribution.

DEFENDANTS' EXHIBIT No. 2

West Tennessee Power and Light

[fol. 4079]

	1928	1929	1930	1931	1932	1933	1934	1935	1936	*1937
Operating Revenues:										
Residential.....	\$170,530.91	\$192,330.16	\$198,657.26	\$212,562.83	\$209,433.97	\$184,326.55	\$177,932.07	\$195,359.65	\$203,471.56	\$196,878.51
Commercial.....	169,531.93	192,365.87	215,986.23	206,648.71	185,542.23	159,474.80	153,638.13	179,501.96	204,080.69	205,675.89
Industrial.....	160,146.75	182,145.26	138,667.96	119,299.26	121,256.74	125,592.11	125,244.72	135,280.58	151,981.51	161,802.52
Farm.....			13,015.56	14,524.86	14,953.04	13,337.59	12,406.56	13,758.49	14,793.22	20,131.99
Government & Municipal.....	21,792.28	26,538.33	33,334.66	36,724.56	32,332.34	30,818.43	31,721.72	34,663.43	36,859.57	36,510.49
Public Utilities.....	1,509.19	1,678.09	4,434.10	8,388.61	7,873.70	7,250.96	8,210.53	8,713.46	10,216.66	11,906.72
Subtotal.....	523,511.06	595,057.71	604,095.77	598,148.83	571,392.02	520,800.44	509,153.73	567,277.57	621,403.21	632,906.12
Interchange.....	1,054.98	36.35	125.22	143.18	5.99	1.91	4.84	2.99		
Interdepartmental.....	18,980.49	23,344.62	20,589.47	15,431.68	14,305.49	13,144.91	13,733.35	13,452.09	13,745.18	13,292.56
Total.....	543,546.53	618,438.68	624,810.46	613,723.69	585,703.50	533,947.26	522,891.92	580,732.65	635,148.39	646,198.68
Misc. Revenues.....	1,495.06	1,035.58	2,259.31	2,546.22	2,384.32	2,701.14	2,539.20	2,640.88	2,716.32	2,966.23
Merchandise & Jobbing.....	820.21	697.53	2,154.45	#278.93	#1,246.65	1,532.53	2,730.04	3,868.89	1,095.51	**4,770.87
Total Operating Revenues.....	545,861.80	620,171.79	629,224.22	615,990.98	586,841.17	538,180.93	525,161.16	587,242.42	638,960.22	653,935.78
Operating Expenses:										
Production & Trans.....	104,689.20	131,244.89	124,614.75	118,098.69	115,571.87	109,566.23	115,437.94	124,684.22	146,737.38	159,742.68
Distribution.....	14,888.26	14,549.39	14,033.64	14,889.51	18,357.04	18,863.73	16,633.38	18,094.09	23,996.28	25,908.54
Utilization.....	4,839.83	4,672.26	4,668.16	6,131.37	6,475.00	5,242.61	5,999.88	6,607.04	6,194.44	5,513.38
Customers.....	11,771.13	14,447.60	15,959.82	17,688.55	23,121.28	18,425.34	13,906.72	16,841.13	18,471.47	17,091.79
New Business.....	3,818.78	8,075.36	12,787.82	9,066.92	6,648.73	7,335.35	10,058.01	11,097.25	24,303.75	26,818.33
General.....	53,140.66	62,132.86	49,345.51	52,610.47	44,818.17	43,706.22	41,558.36	45,844.27	61,645.38	59,542.35
Total Operating Expenses.....	193,147.86	235,122.36	221,409.70	218,485.51	214,992.09	203,139.48	203,594.29	223,168.00	281,348.70	294,617.07
Net Operating Revenue.....	352,713.94	385,049.43	407,814.52	397,505.47	371,849.08	335,041.45	324,566.87	364,074.42	357,611.52	359,318.71
Taxes.....	53,944.30	58,032.48	59,840.39	62,979.52	43,223.05	52,766.70	60,353.91	72,090.71	84,961.83	100,815.92
Gross Operating Income.....	\$298,769.64	\$327,016.95	\$347,974.13	\$334,525.95	\$328,626.03	\$282,274.75	\$264,212.96	\$291,983.71	\$272,649.69	\$258,502.79
Aver. No. of Customers:										
Residential.....				6,394.75	6,220.09	6,093.59	6,367.90	6,669.40	6,998.63	7,104.46
Commercial.....				1,760.51	1,704.28	1,590.70	1,533.53	1,609.46	1,830.28	1,877.19
Industrial.....				127.83	145.16	221.91	324.41	322.15	193.49	201.66
Farm.....				377.33	375.81	390.56	406.32	414.64	438.63	606.46
Government & Municipal.....				85.50	100.00	120.18	125.43	124.75	121.18	115.76
Public Utilities.....				1.98	1.98	1.98	1.98	1.98	1.98	1.98
Interchange.....				1.00	1.00	1.00	1.00	1.00	.84	.28
Total.....				8,748.90	8,548.32	8,419.92	8,760.57	9,143.38	9,585.03	9,907.79
Total KWH. Sold:										
Residential.....	1,441,807	1,938,875	2,512,559	2,900,845	2,930,598	2,791,051	3,131,860	3,542,665	4,071,188	4,390,957
Commercial.....	1,555,272	1,982,435	3,116,833	3,176,330	2,863,953	2,539,688	2,787,476	3,311,083	4,194,822	4,680,794
Industrial.....	6,126,240	7,251,644	5,603,837	4,273,423	4,730,209	4,730,755	4,755,145	5,174,198	7,119,776	8,080,659
Farm.....			142,937	183,007	196,811	186,096	195,014	227,586	284,107	436,101
Government & Municipal.....	555,106	733,456	822,379	1,020,069	790,696	777,933	817,021	897,066	1,029,453	975,987
Public Utilities.....	31,948	44,700	235,990	418,390	354,450	320,740	388,406	472,180	598,340	757,750
Interchange.....	109,710	10,800	31,201	35,040	1,440	480	1,440	960		
Interdepartmental.....	1,548,189	1,968,819	2,058,961	1,685,226	1,565,249	1,454,532	1,509,109	1,481,771	1,562,121	1,534,164
Total.....	11,368,272	13,930,729	14,524,687	13,692,330	13,433,406	12,801,275	13,585,471	15,107,511	18,859,807	20,856,412
Aver. KWH. sale per res. customer.....										
				453.63	471.15	458.00	491.82	531.18	581.71	618.06
per farm customer.....										
				485.01	523.70					

* Year ending July 1937.

** Forfeited discounts 1st 7 mos. of 1937..... \$3,569.35

Merchandise & Jobbing net last 5 mos. of 1936..... 1,201.52

\$4 770 87

[fol. 4080] DEFENDANTS' EXHIBIT No. 3

Order by Railroad and Public Utilities Commission of the
State of Tennessee, Dated May 18, 1937

Before the Railroad and Public Utilities Commission of the
State of Tennessee

Nashville

May 18, 1937.

Docket No. 2030

In re West Tennessee Power and Light Company Applica-
tion for Rural Line Extensions on Humboldt Road, Lower
Brownsville Road and Old Pinson Road

Opinion and Order

This Commission on January 1, 1937, in Docket No. 2025, on its own initiative, issued an order requiring all public utility companies operating in the State of Tennessee to obtain approval of the Commission before beginning the construction of any line extension, the voltage of which is to be operated at or in excess of 4000 volts, or where the cost of such extension exceeds \$5,000.00.

In compliance with this order the West Tennessee Power and Light Company, a privately owned utility operating in Madison County and several other West Tennessee counties, made application with the Railroad and Public Utilities Commission on January 11, 1937, for authorization to construct three rural extensions to its present rural lines. Each of these extensions was to be operated in excess of 4000 volts, though each was to be for a cost of less than \$5,000.00.

We are setting out below the extensions in question:

Line No. 1:

A 13 kv. line from the end of the present line on the Humboldt Road, approximately five miles north of the City of Jackson to Fairview—Distance 4.1 miles—Number of prospective customers 12—

Estimated Annual Earnings	\$360.00
Estimated Cost of Line	4,100.00

DEFENDANTS' EXHIBIT No. 3

[fol. 4081] Line No. 2:

A 7 kv. line from the end of the present line on the lower Brownsville Road, approximately three miles west of the City of Jackson to Witherspoon's Store—Distance 3.4 miles—Number of prospective customers 19—

Estimated Annual Earnings.....	\$570.00
Estimated Cost of Line.....	3,400.00

Line No. 3:

A 13 kv. line on the Old Pinson Road, beginning at a point approximately 1,000 feet south of where the Old Pinson Road intersects the Harts Bridge Road, and running one mile south—Number of prospective customers 12—

Estimated Annual Earnings.....	\$360.00
Estimated Cost of Line.....	1,000.00

This line is a branch off our Jackson-Henderson 13 kv. Transmission Line, which is located on private right-of-way, and parallels the Old Pinson Road.

The petition sets out that the above three lines had been planned and surveyed and the necessary material ordered prior to the issuance of the Commission's order on January 1, 1937.

Parties interested in the extension of rural lines were notified of the petition filed by the West Tennessee Power and Light Company, and the Southwest Tennessee Electric Membership Corporation, a corporation organized under the non-profit electric membership cooperative statutes of this State, filed a formal protest with the Commission opposing the granting of the authority requested by the West Tennessee Power & Light Company, and asked for an opportunity to be heard before the Commission in the matter.

Upon receipt of protest the matter was set for hearing before the Commission on February 3, 1937. This case was heard before the Commission on February 3, 1937, and at this hearing all interested parties were given an opportunity to present such evidence and information as they desired.

The West Tennessee Power & Light Company presented testimony showing that the West Tennessee Power & Light Company proposed to build three lines.

DEFENDANTS' EXHIBIT No. 3

1. Line No. 1 extends from the end of the present line on Humboldt Road approximately five miles north of the City of Jackson to Fairview, a distance of 4.1 miles. The company estimated that it would serve on this extension approximately twelve customers with an estimated annual earning of \$360.00.

The estimated cost of constructing this line was placed at 1,100.00.

Representatives of the West Tennessee Power & Light Company testified that it was necessary that this line be constructed in order to insure excellence of service between Jackson and territory in the neighborhood of Fairview, since by the construction of this line the West Tennessee Power & Light Company would be in position to furnish service through Humboldt or through Jackson, and would be [fol. 4082] of advantage to the company in furnishing the best possible service to its customers.

2. Line No. 2 is the proposed line from the end of the present lines on the lower Brownsville Road, approximately three miles west of the City of Jackson to Witherspoon's Store, an approximate distance of 3.4 miles. The company estimated that it would serve approximately nineteen customers on this extension with an estimated annual earning of \$570.00.

3. Line No. 3 is a proposed line beginning at approximately 1,000 feet south of where the old Pinson Road intersects the Harts Bridge Road, extending about one mile south. The Exhibit sets forth that there were twelve prospective customers with an estimated annual earning of \$360.00.

It appears that the West Tennessee Power & Light Company does not have contracts with prospective customers but has completed surveys with reference to the three lines proposed and estimates that it will be able to serve twelve customers on each of two of the said lines and a few more than that on the third.

The Southwest Tennessee Electric Membership Corporation has proposed, according to evidence presented at the hearing, a development for rural electric service in Madison County since 1934. (This date should be 1935.)

DEFENDANTS' EXHIBIT No. 3

The Southwest Association is the successor of certain prior electric membership corporations projected for the same purpose, one of which was the Madison County Electric Membership Corporation. For reasons satisfactory to such associations, the project was finally united under one cooperative, that involved here, which proposes to serve rural users of electricity in Madison, Haywood and Tipton Counties.

It appears that the Southwest Association has signed contracts with over four hundred prospective customers for electric service. The Southwest Tennessee Electric Membership Corporation proposes to purchase electric energy for distribution in the territory in which it is planning to operate from the Tennessee Valley Authority at wholesale rates. The Cooperative proposes to serve more than four hundred customers in Madison County immediately, and desires to begin its construction activities within the next two or three months, and in fact some of the materials have been purchased and are ready for erection at this time. Over a period of one or two years the present cooperative association and its predecessors have been making surveys with reference to furnishing rural service in Madison County. These surveys were finally completed and when all requirements of the Rural Electrification Administration had been satisfactorily complied with, the grant of a loan was obtained from the REA for the construction of the project in the entire three counties which it proposes to serve.

The Cooperative insists that its contracts are signed with the various customers which the West Tennessee Power & Light Company expects, as a result of its survey, to furnish with electricity, and it is the contention of the Cooperative that each of the three lines proposed to be constructed by the West Tennessee Power & Light Company would seriously interfere with the entire project planned by it.

The three proposed lines of the West Tennessee Power & [fol. 4083] Light Company, as is clearly shown by maps of Madison County filed at the hearing, would parallel the proposed lines of the Southwest Tennessee Electric Membership Corporation. The officers of the Cooperative Association believe, rightly or wrongly, that these three proposed lines were located at key points and designed to draw out

DEFENDANTS' EXHIBIT No. 3

of the cooperative project certain well-situated customers, and would have the effect, if not the purpose, of wrecking or seriously handicapping the construction of the project proposed by it and approved by the Rural Electrification Administration.

On the other hand, the company asserts that the construction of these rural lines, as proposed by it, is in good faith, and without any purpose or thought to hinder or oppose the cooperative, in pursuance to its long-range program of providing electric service to those economically prepared to receive same in Madison County.

In the many years that the Power Company has served Madison County, it has made electricity available to approximately five hundred rural customers. Most of these customers reside along the highways upon which the company's transmission lines run.

It is interesting to note that on the three specific projects that are before the Commission, the cooperative association proposes to serve nearly double the number of customers which are regarded as prospects by the power company. The power company also states that its experience in the past has been that the surveys it has made have proved to be accurate, and that the number of customers it estimates it can serve usually turns out to be the number actually served.

It appears, upon all the facts adduced at the hearing, that there is a grave probability that the authorization of the three proposed extensions of the West Tennessee Power and Light Company would seriously injure the program of the Southwest Tennessee Electric Membership Corporation. It would not only deprive this corporation of certain customers which it already has under contract, but in doing so it would increase the difficulty of extending service to other proposed customers who reside slightly further on and are proposed to be served by the cooperative, and would render the cost of furnishing service to certain groups uneconomical and prohibitive.

Under this showing it would appear that the greater good to the greater number would be best served by denying to the power company the authority to construct the lines petitioned for even though this denial may temporarily em-

DEFENDANTS' EXHIBIT No. 3

barrass some of the prospective customers who would immediately obtain electric service otherwise.

This Commission does not have jurisdiction over any cooperative association. The problems arising from the entry of such associations into the utility field are of comparatively recent origin. However, the Public Service Commission of Wisconsin has been confronted with these problems and has taken appropriate action to solve them. While the opinion of this Commission, because of variances in the statutes of the two states, is in many respects not germane to the questions involved here, many of the principles there enunciated are pertinent to those issues. For its clear and distinct analysis of those problems arising from the extension of rural lines, wherein the cooperatives are brought in conflict with the utilities, we quote from the opinion of the Wisconsin Commission the following:

[fol. 4084] "We hold no brief for or against any agency in this competitive struggle. Our primary concern is in seeing that the maximum number of farmers get service at the lowest cost consistent with the requirements for adequate and continuous service. We feel that the agency which should serve, assuming minimum requirements of service standards, financial responsibility, etc., are met, is largely a matter of choice with the farmers themselves, as long as wasteful competition or duplication of facilities will not result. The Commission has steadfastly adhered to, and repeatedly expressed, this view, both formally and informally. To obtain this objective of an orderly development of rural electrification, some rules and procedure are necessary. Since this Commission is the only agency having any jurisdiction over any of these competing agencies, we have established and propose to continue certain rules which, within our legal powers are designed to promote orderly procedure and to prevent unregulated and wasteful competition . . . When the public utility statutes are read as a whole, they evidence a legislative policy of giving the Commission broad authority to regulate utilities so as to accomplish an orderly development of utility service, without wasteful territorial competition and duplication, except where no other remedy is feasible. These powers are additional to those involved in prescribing reasonable and non-

DEPENDANTS' EXHIBIT No. 3

discriminatory rates, rules, and regulations and others functions associated therewith." In re: Extensions of Rural Lines of Electric Utilities, No. 2-U-965, Wis. P. S. C. Aug. 27, 1936.

The Wisconsin Commission further said, in denying the application of the Wisconsin Power & Light Company to extend its rural electric lines:

"The principal question presented by this application is whether the company should be authorized to extend its rural distribution system * * * when construction of cooperative electric lines is now under way in the area. This is the first time this question has come to us for decision, since the Richland County cooperative is the first in the state to get construction started. A brief statement of the law as the Commission understands it seems appropriate in connection with the consideration of this question. Section 196.49 of the Wisconsin Statutes, under which the Commission has jurisdiction over public utility extensions of plant, was enacted in 1931 and is clearly a restrictive law to prevent unwarranted expansion of utility facilities beyond service demands in the immediate future. At the time the law was enacted, it was assumed that indeterminate permits existed in towns as well as in cities and villages. The Wisconsin Supreme Court in 1932 held otherwise. In *South Shore Utility Co. v. Railroad Commission*, 207 Wis. 95, the state's highest court held that under existing statutes towns have no authority to grant exclusive permits or franchises to public utilities. Therefore rural territory is an open field so far as franchise rights are concerned. Section 196.49 (1) provides that a public utility on and after August [fol. 4085] 1, 1931, must secure a certificate of authority from the Commission before extending facilities or rendering service in a municipality where neither it or any other public utility was legally operating on that date. Section 196.49 (2) permits the Commission to issue a general order with which public utilities must comply before beginning 'construction, installation, or operation of any new plant, equipment, property or facility * * * extension * * *'. General Order 2-U-20 was issued under this subsection and has been used, together with territorial division agreements between utilities, to prevent the chaotic, waste-

DEFENDANTS' EXHIBIT No. 3

ful, and unrestricted competition for rural territory that might otherwise have resulted from the South Shore decision. Section 196.49 (4) provides that the Commission in its general or special order may require that no new construction shall be begun until it has found that public convenience and necessity require it. . . . Commission is also given power to grant authority for only a portion of a project or to lay down terms and conditions that will insure that a project meets the requirements of this section of the law.

For more than a year the Federal Government, through the Rural Electrification Administration, has been offering to lend funds for building new rural lines. In this State a rural electrification coordination committee was formed to aid in promoting cooperative associations of farmers desiring to borrow funds for the construction of lines to serve themselves. . . . No single governmental body under present interpretations of the Statutes, as we understand the interpretations, has jurisdiction over both public utilities and cooperatives. The Schumacher case, 185 Wis. 303, is urged upon the Commission as a holding by the Wisconsin Supreme Court that cooperative associations which serve only their members are not public utilities which, under existing statutes would be subject to this Commission's jurisdiction. If such be the fact the Commission cannot enforce its orders upon cooperatives nor compel them to render service to members of the public who request service. The Commission is confronted with the question of deciding the extent to which the presence of cooperative facilities must be considered in determining whether public convenience and necessity require an extension of public utility facilities proposed to be made in an area. The Commission decided that the best way to promote orderly and economic development of rural electrification under provisions of a statute enacted long before REA-financed electric cooperatives had been conceived was to issue a general order applying solely to rural electric extensions by public utilities. This order is 2-U-965. . . . A procedure is there provided for equitable settlement of conflicts between public utilities and electric cooperatives seeking to operate in the same areas. The cooperative is given opportunity to object to a utility extension and to be heard in opposition before

DEFENDANTS' EXHIBIT No. 3

the Commission; the utility may make limited extensions without specific authority for unlimited extensions in areas [fol. 4086] as to which agreements have been reached with cooperatives or where electrification by public utilities has reached a point of saturation that leaves no opportunity for the profitable establishment of a cooperative. . . . It is the Commission's duty under Section 196.49 to safeguard customers and investors of public utilities against excess facilities. . . . The field survey by our engineer indicates that this area is not capable of supporting two competing electric service agencies with any assurance that cost of service will be regained in revenues by the company and by the cooperative.

Members of the cooperative and customers of the company who do not live in this area probably will be adversely affected if duplicate facilities are permitted, since the extra cost will immediately or eventually be reflected in their rates. To authorize public utility service to this group of 23 (customers signed by company) might delay cooperative service to a much larger group of cooperative members in nearby areas, who have waited as long as have the 23 for electricity. We presume that those of the 23 who are not already members of the cooperative may become so and be assured service from the cooperative." In re: Application of Wisconsin Power and Light Co., No. CA-237, Wis. P. S. C., December 3, 1936.

The Commission is further of the opinion that the West Tennessee Power and Light Company, however, should be permitted at this time to construct Line No. 1, as set out in its petition, in order that continuous and satisfactory service to area now served might be insured, but that the West Tennessee Power and Light Company should not be permitted to serve customers off this new Line No. 1 since in doing so it might keep electric service from being extended by the Southwest Tennessee Electric Membership Corporation to serve a greater number of customers and a greater area, since said line would parallel for some distance the proposed line of the cooperative.

The Commission is further of the opinion that the material ordered by the West Tennessee Power & Light Company for construction of these proposed lines can be used

DEFENDANTS' EXHIBIT No. 3

advantageously for the construction of other lines and improvement of its existing transmission and distribution systems, and will not result in a loss to the company because of refusal to this Commission to approve the specific projects in the application.

It is Therefore Ordered by the Commission:

That the petition of the West Tennessee Power & Light Company asking for approval of the Commission for the building of the following lines be denied:

[fol. 4087] Line No. 2—a 7 kv. line from the end of the present line on the lower Brownsville Road, approximately three miles west of the City of Jackson to Witherspoon's Store—Distance 3.4 miles.

Line No. 3—a 13 kv. line on the old Pinson Road, beginning at a point approximately 1,000 feet south of where the Old Pinson Road intersects the Harts Bridge Road, and running one mile south.

It is Further Ordered, That the West Tennessee Power & Light Company be hereby authorized to construct the following line for the purpose of improving its existing transmission and distribution systems with the provision that the West Tennessee Power & Light Company be denied permission to serve any customers off this connecting line without the specific approval of the Commission:

Line No. 1—a 13 kv. line from the end of the present line on the Humboldt Road, approximately five miles north of the City of Jackson to Fairview—Distance 4.1 miles.

It is Further Ordered, That the Commission retain jurisdiction in this cause and issue such further and future orders as it may deem necessary from time to time.

Porter Dunlap, Chairman; W. H. Turner, Commissioner; Leon Jourolmon, Jr., Commissioner.

I, Dorsey B. Thomas, Secretary of the Railroad and Public Utilities Commission of the State of Tennessee do hereby certify that the foregoing is a true and correct copy of order issued by the Commission in Docket No. 2030.

This 18 day of May, 1937.

(S.) Dorsey B. Thomas, Secretary. (Seal.)

CSR.

[fol. 4088]

DEFENDANTS' EXHIBIT No. 4

Resolution by the Board of Commissioners of the City of
Chattanooga, Dated October 24, 1933

Whereas, the City of Chattanooga, Tennessee desires to make formal application to the Tennessee Valley Authority for the furnishing of electrical current to said City and its inhabitants; and

Whereas, the City of Chattanooga ~~does~~ not own a distribution system and has no legislative authority to finance the construction or acquiring of a distribution system,

Now, Therefore, Be It Resolved by the Board of Commissioners of the City of Chattanooga, Tennessee that on behalf of said City application be and is hereby made to the Tennessee Valley Authority for the furnishing of electric current to the City of Chattanooga for the use of said City and its inhabitants. This application is on condition, however, that the said City obtains legislative authority to construct or acquire a distribution system, and obtains legislative authority to finance the construction or acquiring of a distribution system and, if after investigation it is found that the furnishing by the Tennessee Valley Authority of electric current is to the best interest of the City and its inhabitants.

[fol. 4089]

DEFENDANTS' EXHIBIT No. 5

Letterhead of City of Chattanooga, Tennessee

October 3, 1933.

Tennessee Valley Authority, Attention Mr. David Lilienthal, Knoxville, Tenn.

MY DEAR MR. LILIENTHAL:

As you are perhaps aware, the City of Chattanooga at present has no authority that would enable us to finance a distributing plant; but it is our purpose if investigations show it to be profitable, to distribute power secured from the Tennessee Valley Authority.

The authority we need cannot be secured until another Session of the Legislature of Tennessee. Will you kindly inform me that if under these circumstances we should at

DEFENDANTS' EXHIBIT No. 5

this time make application for electric power for City of Chattanooga; it being understood that application is contingent upon investigations and securing authority heretofore referred to.

Assuring you of my very high regard, I am,

Sincerely yours, (S.) E. D. Bass, Mayor City of Chattanooga.

[fol. 4090]

DEFENDANTS' EXHIBIT No. 6

Knoxville, Tennessee,

October 9, 1933.

Honorable E. D. Bass, Mayor of Chattanooga, Chattanooga, Tennessee.

MY DEAR MR. MAYOR:

I have your letter of October 3 asking me whether, in view of the lack of present legislative authority in the City of Chattanooga to finance a distribution system, the City should make application for power from the Tennessee Valley Authority "contingent upon investigations and securing authority" for such purposes.

I see no reason why the City of Chattanooga may not make a contingent application to the Tennessee Valley Authority. In point of fact, the only cities which are able to make a definite application are those which now own their distribution systems and are free to enter into contracts; such situations are not common. I think I should also point out that the number of applications or inquiries has grown so large that the matter of choice between the municipalities grows constantly more difficult.

In response to your inquiry, I hope you will understand that the question of whether the City of Chattanooga should or should not acquire its own distribution system is a matter of local policy to be determined wholly by the citizens of your City without any suggestion or influence whatever from the Tennessee Valley Authority. I hope that you will not regard my attempt to answer your question as in any wise a suggestion or recommendation favoring or disapproving this policy of the ownership of power facilities within your City.

DEFENDANTS' EXHIBIT No. 6

It was a pleasure to see you, and I look forward to other opportunities.

Sincerely yours, Tennessee Valley Authority, by
David E. Lilienthal, Director and General Counsel.

DEL: JH.

[fol. 4091] DEFENDANTS' EXHIBIT No. 7

Letterhead of City of Chattanooga, Tennessee

Oct. 24, 1933.

Tennessee Valley Authority, Knoxville, Tenn.

Attn. Mr. David Lilienthal

MY DEAR MR. LILIENTHAL:

The City of Chattanooga is filing with the Tennessee Valley Authority today formal application for use of power for Chattanooga, based upon certain contingencies set out in application.

One of the first things we desire to do is to have a survey made of this city and locality with investigations and estimates as to cost of distributing plant and other matters connected therewith, in order that we might ascertain at what price this city could furnish power to consumers.

I have been informed that the Tennessee Valley Authority would make such survey and estimates for consumers asking for it, therefore may I ask you to advise me if this is correct, and if upon application the Tennessee Valley Authority would furnish the City of Chattanooga with this information.

Assuring you of my very high regard, I am,

Sincerely yours, (S.) E. D. Bass, Mayor City of
Chattanooga.

[fol. 4092] DEFENDANTS' EXHIBIT No. 8

Letterhead of City of Chattanooga, Tennessee

March 19, 1934.

Tennessee Valley Authority, Attention Mr. David E. Lilienthal, Knoxville, Tenn.

MY DEAR MR. LILIENTHAL:

I am enclosing a copy of opinion furnished me by City Attorney J. W. Anderson referring to relation of contract entered into between the Tennessee Valley Authority and the Tennessee Electric Power Company in so far as said contract affects furnishing electrical energy to the City of Chattanooga by the Tennessee Valley Authority.

May I ask that you advise me, or have your attorney do so, if you concur with City Attorney Anderson's opinion in his construction of this contract with regard to the particular question of City of Chattanooga securing electrical energy from Tennessee Valley Authority. I would very much appreciate a reply at earliest possible moment.

For your information, city authorities of Chattanooga are preparing to employ engineers for the purpose of gathering such information as we will need in submitting the question of municipal ownership to the people. We expect to submit this question some time during the coming summer; and in securing the necessary data we shall avail ourselves of your kind offer contained in your letter of November 27, 1933 to me.

Assuring you of my very high regard, I am

Sincerely yours, (S.) E. D. Bass, Mayor City of Chattanooga.

EDB: WM.

[fol. 4093] DEFENDANTS' EXHIBIT No. 9

Letterhead of City of Chattanooga, Tennessee

March 26, 1934.

Mr. V. D. L. Robinson, Tennessee Valley Authority, Knoxville, Tenn.

BY DEAR MR. ROBINSON:

I would esteem it a very personal favor if it would be possible for you to see that I get a reply as soon as possible to my letter of March 19th to Mr. Lilienthal.

I know how very busy Mr. Lilienthal is, and how many inquiries he has, and if you can in any way expedite this matter I will appreciate it more than I can express.

Thanking you, I am,

Sincerely yours, (S.) E. D. Bass, Mayor City of Chattanooga.

[fol. 4094] DEFENDANTS' EXHIBIT No. 10

Resolution by the Council of the City of Knoxville, Adopted November 1, 1932

"Mayor O'Connor moved to direct the City Manager to make inquiry and study as to the cost of construction and operation of an electric power plant for the City of Knoxville. Carried."

[fol. 4095] DEFENDANTS' EXHIBIT No. 11

This exhibit is a part of Resolution No. 709 adopted by the Council of the City of Knoxville, Tennessee, on February 21, 1933. (Complainants' Exhibit No. 373.)

(Omitted).

[fol. 4096] DEFENDANTS' EXHIBIT No. 12

Minute Entry of the Council of the City of Knoxville, Dated
July 11, 1933

"Councilman Smithson presented and read the following report of the Committee appointed to consider municipal power projects:

July 11, 1933.

To the Council of the City of Knoxville.

GENTLEMEN:

Your Committee appointed to consider municipal power projects, wish to recommend that the City Manager be instructed to make application for power and get all necessary information relative to the furtherance of this matter.

Respectively submitted, Charlton Karns, F. H. Snipes, W. S. Smithson.

Councilman Cockrum moved that the report be adopted and that the Mayor appoint a Committee to work with the City Manager. Carried. The following Committee was named by the Mayor: Councilmen Cockrum, Smithson and Karns."

[fol. 4097] DEFENDANTS' EXHIBIT No. 13

• • • • •

Chattanooga, Tenn.,

March 7, 1930.

Yates Bleachery Company (hereinafter called the Consumer) hereby makes application to The Tennessee Electric Power Company (hereinafter called the Company), to furnish to the Consumer for his sole and exclusive use at Flintstone, Georgia, electric energy required or used by the Consumer for 2300 volt, 60 cycle, 3-phase service * * * subject to the Companys' standard rates and rules and regulations as now or hereafter on file with the Railroad and Public Utilities Commission of the State of Tennessee from the date service begins under this application and thereafter until thirty (30) days written notice to discontinue

DEFENDANTS' EXHIBIT No. 13

shall have been given by either of the parties hereto to the other.

[fol. 4098] The Consumer agrees to pay monthly for all electric service furnished under this application at the rates specified in Schedule 1, Rate A of the Company's rates now or hereafter on file with the Railroad and Public Utilities Commission of the State of Tennessee.

The Demand contracted for is 30 kw.

The Consumer agrees to pay a minimum monthly charge of \$—.

This application cannot be transferred or assigned by the Consumer.

All agreements, rules and regulations printed on this sheet shall be deemed a part hereof.

Yates Bleachery Co., by A. E. Yates, Prest.

The Tennessee Electric Power Company, by P. E. Shacklett, Asst. Mgr., Chattanooga District.

Rules and Regulations attached to the application are omitted.

[fol. 4099] DEFENDANTS' EXHIBIT No. 14

Letterhead of The Tennessee Electric Power Company,
Chattanooga, Tennessee

April 13, 1937.

Yates Bleachery Company, Flintstone, Georgia.

GENTLEMEN:

In reference to the power contract signed today, April 13, 1937, we recognize and go on record as approving the use of lighting in connection with the plant, the use of light and power at the homes of Mr. A. E. Yates and Mr. T. A. Yates, officials of the Yates Bleachery Company, and the use of light and power at the company store as being "incidental to the business" of operating the bleachery.

Assuring you of our pleasure in welcoming you again as a customer, and pledging our facilities to make this contract one of mutual advantage, I am,

Yours very truly, E. D. Reed, Manager Chattanooga
District.

EDR/G.

[fol. 4100]

DEFENDANTS' EXHIBIT No. 15

The Tennessee Electric Power Company
Market Street at Sixth—Chattanooga

Power Service from May 15 to June 21, '37

This Bill Audited by ———.

Meter Readings—Showing Energy Used

Present Reading	.....	9207		2450	
Previous Reading	.....	9155		2433	
Difference	.....	52		17	
Constant	.....	300		300	
Total	.....	15600	x	5100	.. 20,700
270		Kva		Demand @	
270	x	50	13500	@	1½
			7200	@	01
					\$202.50
					72.00
				Gross Net	..... \$274.50
				Net Gross	..... 288.22

Charge Power—Elec.

Yates Bleachery Co.

R13GA Flintstone

200 Ga

Co No. 45582

(Endorsed on Back) Received Jun. 30, 1937. Ans'd.

(Here follows one photolithograph, side folio 4101)

DEFENDANTS' EXHIBIT NO. 16

TABLE VII 3A - PROBABLE FUTURE WATER TRAFFIC - TENNESSEE RIVER

Commodity	Existing Traffic		Potential Port to Port Traffic		Probable Traffic First Period		Potential River Water Traffic	
	Tons per Year	Annual Savings	Tons per Year	Annual Savings	Tons per Year	Annual Savings	Tons per Year	Annual Savings
Automobiles and Trucks			425	\$ 201	425	\$ 201	575	\$
Tobacco, Household Goods, Misc.	110,081	\$222,570	250,540	148,705	360,621	371,275	55,320	
Textiles, Crude Petroleum, Chemicals, Syrup, etc.			48,425	37,332	48,425	37,332	6,000	
Tobacco Refuse, Cotton, etc.			90,400	57,812	90,400	57,812	13,200	
Nails & Fastenings, Structural Steel, etc.	32,048	14,037	66,060	51,100	98,108	67,137	60,480	
Petroleum Products Castings, Brass, Print, etc.			96,550	81,115	96,550	81,115	5,800	
Wheat and other Bulk Grain							234,150	31
Flour, Meal & Mill Products			38,355	35,663	38,355	35,663	98,150	11
Salt			850	566	850	566	50	
Logs, Post, Poles, Lumber	155,917	673,509	940,750	433,851	1,096,667	1,109,360	743,355	73
Brick, Tile			125,425	57,802	125,425	57,802	3,050	
Cement, Lime, Plaster	12,323	37,545	396,950	154,070	409,273	191,615	136,580	14
Clay, Stone, Sand, Gravel	1,438,455	1,093,220	734,640	284,841	2,173,095	1,578,061	189,565	24
Coal and Coke			118,000	24,414	118,000	24,414	569,583	11

TOTAL 1,748,834 2,044,861 2,907,470 1,247,473 4,266,164 2,412,283 9,115,820

Petroleum, Chemicals, Syrup, etc.			48,425	37,332	48,425	37,332	6,000	
Tobacco Refuse, Cotton, etc.			90,400	57,812	90,400	57,812	13,200	
Rails & Fastenings, Structural Steel, etc.	32,048	16,037	66,060	51,100	98,108	67,137	60,480	
Petroleum Products Castings, News Print, etc.			96,550	81,115	96,550	81,115	8,800	
Wheat and other Bulk Grain							234,150	3
Flour, Meal & Mill Products			38,355	35,663	38,355	35,663	98,150	1
Salt			850	566	850	566	50	
Logs, Post, Poles, Lumber	155,917	673,509	940,750	433,851	1,096,667	1,109,360	743,355	7
Brick, Tile			125,425	57,802	125,425	57,802	3,050	
Cement, Lime, Plaster	12,323	37,545	396,980	154,070	409,273	191,615	136,580	1
Clay, Stone, Sand, Gravel	1,438,455	1,093,220	734,640	284,841	2,173,095	1,378,061	189,545	2
Coal and Coke			118,000	24,414	118,000	24,414	569,583	1
<hr/>								
TOTAL	1,748,824	2,044,881	2,907,370	1,367,472	4,656,194	3,412,383	2,115,869	1,8

Item for Logs, Posts, Poles much too high as the general trend for traf
be an indefinite decrease. Total predicted above is 1,684,105 tons, s
It would be more nearly correct to allow only half of this traffic a
balance of this item transferred to Misc. to allow for new move
contingencies.

Another transfer to Misc. would be about 200,000 tons of
traffic between Knoxville and Chattanooga which covers
some of the duplications in H. Doc. 328, not corrected above.
This would give about 1,000,000 tons for contingencies - O. K.

DEFENDANTS' EXHIBIT NO. 16

TABLE VII SA - PROBABLE FUTURE WATER TRAFFIC - TENNESSEE RIVER

Commodity	Existing Traffic		Potential Port to Port Traffic		Probable Traffic First Period		Potential Rail - Water Traffic		Probable Traffic Later Years	
	Tons per Year	Annual Savings	Tons per Year	Annual Savings	Tons per Year	Annual Savings	Tons per Year	Annual Savings	Tons per Year	Annual Savings
WHEAT										
1 Trucks			425	\$ 201	425	\$ 201	575	\$ 600	1,000	\$ 889
Sec. House-										
ld Goods, Misc.	110,081	\$222,570	250,540	148,705	340,621	371,275	55,320	65,909	415,941	437,184
iles, Crude										
roleum,										
minerals, Syrup, etc.			48,425	37,332	48,425	37,332	6,000	6,497	54,425	43,829
Sec Refuse,										
tion, etc.			90,400	57,812	90,400	57,812	13,200	13,290	103,600	71,102
is & Fastenings,										
natural Steel,										
Co.	32,048	16,037	66,060	51,100	98,108	67,137	60,480	70,416	158,598	137,553
olum Products										
stings, Rows										
Int, etc.			96,550	81,115	96,550	81,115	5,800	5,866	102,350	86,981
t and other										
lk Grain							234,150	323,530	234,150	323,530
Meal &			38,355	35,663	38,355	35,663	98,150	115,178	156,805	150,841
li Products			850	566	850	566	50	55	900	621
Post, Poles,										
ber	155,917	675,509	940,750	453,851	1,096,667	1,109,360	743,355	733,063	1,840,022	1,842,423
c, Tile			125,425	57,802	125,425	57,802	3,050	3,199	128,475	61,081
it, Line,										
ster	12,323	37,545	396,950	154,070	409,273	191,615	136,580	141,032	545,853	332,647
Stone,										
ld, Gravel	1,438,455	1,093,230	734,640	294,841	2,173,095	1,378,061	189,565	220,980	2,362,660	1,599,011
and Coke			118,000	24,414	118,000	24,414	569,583	112,464	687,583	156,878
	1,748,824	2,044,881	2,907,370	1,367,472	4,656,194	3,412,383	2,115,868	1,812,137	6,772,062	5,224,450

m for Logs, Posts, Poles much too high as the general trend for traffic in these items will be an indefinite decrease. Total predicted above is 1,684,105 tons, savings \$1,166,194. would be more nearly correct to allow only half of this traffic and savings, and have the balance of this item transferred to Misc. to allow for new movements and etc.

Trucks			425	\$ 201	425	\$ 201	575	\$ 608	1,000	\$ 889
so, House-										
A Goods, Misc.	110,081	\$222,570	250,540	148,705	360,621	371,275	55,320	65,909	415,941	437,184
les, Crude										
roleum,										
miscals, Syrup, etc.			48,425	37,332	48,425	37,332	6,000	6,497	54,425	43,829
co Refuse,										
ten, etc.			90,400	57,812	90,400	57,812	13,200	13,230	108,600	71,102
& Fastenings,										
atural Steel,										
.	32,048	16,027	66,060	51,100	98,198	67,127	60,480	70,416	158,598	137,553
loun Products										
tings, News										
nt, etc.			96,550	81,115	96,550	81,115	5,800	5,866	102,350	86,981
and other										
k Grain							234,180	323,530	234,150	323,530
Meal &										
Products			38,355	35,663	38,355	35,663	98,180	115,178	156,805	150,841
			880	566	850	566	80	58	900	621
Post, Poles,										
ber	155,917	675,509	940,750	455,851	1,096,667	1,109,360	745,355	733,063	1,840,022	1,842,423
, Tile			125,425	57,802	125,425	57,802	3,030	3,199	128,475	61,001
t, Lime,										
ster	12,323	37,545	396,950	154,070	409,273	191,615	136,580	141,032	545,853	332,647
Stone,										
A, Gravel	1,438,455	1,085,220	734,640	294,841	2,173,095	1,378,061	189,565	220,980	2,362,660	1,599,011
and Coke			118,000	24,414	118,000	24,414	569,583	112,464	687,583	156,878
<hr/>										
1,748,826 2,044,881 2,907,370 1,367,472 4,656,194 3,412,383 2,115,868 1,812,137 6,772,062 5,224,490										

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e an indefinite decrease. Total predicted above is 1,684,105 tons, savings \$1,166,194.
would be more nearly correct to allow only half of this traffic and savings, and have the
balance of this item transferred to Misc. to allow for new movements and other
contingencies.

other transfer to Misc. would be about 200,000 tons of
ffic between Knoxville and Chattanooga which covers
ne of the duplications in H. Doc. 328, not corrected above.
would give about 1,000,000 tons for contingencies - O. K.

[fol. 4102] DEFENDANTS' EXHIBIT No. 17

Waiver

To be attached to Loan Agreement dated April 2, 1934, between the City of Knoxville, Knox County, Tennessee, and the United States of America (Docket No. 3289 Electric Distribution system).

April 10, 1935.

Paragraph 2, Subdivision (f) of Part Two of said Agreement reads as follows:

"2 Preliminary Proceedings by Borrower. When the Agreement has been signed on behalf of the Borrower, the Borrower shall promptly: * * *

(f) Submit for approval a contract with the Tennessee Valley Authority stipulating that the said Authority will agree to furnish to the Borrower for a period of not less than twenty years, to a point or points adjacent to the limits of the City and previously agreed upon, and the Borrower to accept and pay for a supply of electric energy sufficient in quantity at all times to meet the demands of the [fol. 4103] residential, commercial, and industrial customers to be served by the System. This contract shall contain such other terms and conditions as may be necessary to insure to the Borrower an adequate supply of electric energy, to insure the charging of rates by the Borrower for resale of electric energy and to provide for the disposition of revenues derived from the operation of the System in a manner satisfactory to the administrator."

Paragraph 4, Subdivision (g) of Part Four of said Loan Agreement reads as follows:

"4. *Conditions Precedent to the Government's Obligations.*—The Government shall be under no obligation to pay for any of the Bonds or to make any grant: * * *

(g) *Tennessee Valley Authority Contract.*—If the Borrower shall fail to execute and furnish the Government with two certified copies of a contract between the Borrower and the Tennessee Valley Authority, as provided in Paragraph 2 (f) Part two hereof, such contract to be satisfactory to the Administrator as to form, sufficiency and substance; as to rates to be charged by the Borrower for resale of elec-

DEFENDANTS' EXHIBIT No. 17

trical energy; and as to disposition of revenues of the system;"

[fol. 4104] The provisions of Paragraph 2, Subdivision (f) of part Two and of Paragraph 4, Subdivision (g) of Part Four of said Loan Agreement are hereby waived.

Approved.

United States of America, by ———, Administrator.

[fol. 4105] DEFENDANTS' EXHIBIT No. 18

• • • • •

Superseding Loan and Grant Agreement Between the City of Knoxville, Tennessee, and the United States of America

(PWA Docket No. 3289)

Whereas, the United States of America and the City of Knoxville, Tennessee, entered into a loan and grant agreement dated as of April 2, 1934, and

Whereas, it is deemed to the mutual advantage of said parties to terminate said loan and grant agreement and to substitute in place thereof a new agreement:

Now, therefore, it is agreed, by and between said parties, that said loan and grant agreement dated as of April 2, 1934, be and the same is hereby terminated.

It is further agreed by and between said parties, that the following agreement be substituted in lieu thereof:

1. Loan and Grant.—The United States of America (herein called the "Government") will aid in financing the construction of an electric distribution system, including a central sub-station, secondary sub-stations, and street lighting system on the main streets and boulevards [fol. 4106] (herein called the "Project"), by making loan and grant to the City of Knoxville, Tennessee, (herein called the "Applicant"), in an amount not exceeding in the aggregate the sum of \$2,600,000.

2. Method of Making Loan.—The Government will purchase, at the principal amount thereof plus accrued interest, from the Applicant, obligations of the description set forth below (or such other description as shall be mutually satis-

DEFENDANTS' EXHIBIT No. 18

factory) in the aggregate principal amount of \$2,000,000, less \$300,000 of such obligations which have already been purchased and delivered prior to March 26, 1935, and less such amount of such obligations, if any, as the Applicant may sell to purchasers other than the Government:

- (a) Obligor.—City of Knoxville;
- (b) Type.—Negotiable, general obligations, coupon bond;
- (c) Denomination.—\$1,000.
- (d) Date.—March 1, 1934;
- (e) Interest Rate and Interest Payment Dates.—4 per cent per annum, payable semi-annually on March 1 and September 1;
- (f) Place of Payment.—At the Chase National Bank, City and State of New York;
- (g) Registration Privileges.—Registerable at the option of the holder as to principal only;

Docket No. 3289

(h) Maturities.—Payable on March 1 in years and amounts as follows:

[fol. 4107]

Year	Amount
1937	\$10,000
1938	15,000
1939	20,000
1940	25,000
1941	30,000
1942	35,000
1943	40,000
1944	45,000
1945	50,000
1946	75,000
1947	100,000
1948	150,000
1949	175,000
1950-1953 (both incl.)	200,000
1954	225,000
1955	205,000

(i) Security.—Payable as to both principal and interest from ad valorem taxes which may be levied without limit

DEFENDANTS' EXHIBIT No. 18

as to rate or amount upon all the taxable property within the territorial limits of the Applicant.

3. Amount of Grant.—The Government will make a grant in an amount equal to 30 per centum of the cost of the labor and materials employed upon the project. The Government will make the grant either wholly by the payment of money, or partly by the payment of money and partly by the cancellation of obligations purchased pursuant to this agreement or interest coupons attached thereto, in aggregate amount equal to the amount of the grant less the amount paid in money. In no event shall the grant, whether made partly by payment of money and partly by cancellation, or wholly by payment of money be in excess of \$600,000.

4. Conditions Precedent.—The Government will be under [fol. 4108] no obligation to take up and pay for any bonds which it herein agrees to purchase or to make any grant;

(a) Financial Condition.—If the financial condition of the Applicant shall have changed unfavorably in a material degree from its condition as theretofore represented to the Government;

(b) Cost of Project.—If it appears that the Applicant will not be able to complete the Project described in this agreement for the sum allotted by the Government, or that the Applicant will not be able to obtain any funds which, in addition to such sum, shall be necessary to complete the Project;

5. Interest of Member of Congress.—No member of or Delegate to the Congress of the United States of America shall be admitted to any share or part of this agreement, or to any benefit to arise thereupon.

6. Bonus or Commission.—The Applicant shall not pay any bonus or commission for the purpose of obtaining an approval of the application.

7. Information.—The Applicant shall furnish the Government with reasonable information and data concerning the construction, cost, and progress of the work. Upon request the Applicant shall also furnish the Government, and any purchaser from the Government of at least 25 per

DEFENDANTS' EXHIBIT No. 18

cent of the bonds, with adequate financial statements and other reasonable information and data relating to the Applicant.

[fol. 4109] 8. Bond Circular.—The Applicant shall furnish all such information in proper form for the preparation of a bond circular and shall take all such steps as the Government or any purchaser or purchasers from the Government of not less than 25 per cent of the bonds may reasonably require to aid in the sale by the Government or any such purchaser or purchasers of any or all of the bonds.

9. Insurance.—The applicant shall carry reasonable and adequate insurance upon the completed Project or any completed part thereof accepted by the Applicant or the system of which the Project is a part.

10. Name of Project.—The Applicant shall not name the Project for any living person.

11. Grant and Bond Payments.

(a) Payment for Bonds.—A requisition requesting the Government to take up and pay for bonds will be honored as soon as possible after such bonds are ready for delivery, if the bond transcript and other documents supporting such requisition are complete.

(b) Grant Payments.—From time to time after the execution of this Agreement the applicant may make a requisition or requisitions for payments on account of the grant. If such requisition is in proper form and is accompanied by a certificate of purposes showing in reasonable detail [fol. 4110] the purposes for which the funds will be used, the Government will make a payment or payments on account of the grant in an amount not to exceed 25 per cent of the previously estimated cost of labor and materials to be employed upon the Project.

(c) Final Grant Payment.—At any time after completing the Project, the Applicant may file a requisition requesting the remainder of the grant which, together with all previous payments on account of such grant, shall be an amount not in excess of 30 per cent of the actual cost of labor and materials employed upon the Project, and

DEFENDANTS' EXHIBIT No. 18

not to exceed, in any event, the sum of \$600,000. The final grant requisition will be honored if the documents necessary to support it are complete and work on the Project has been completed in accordance with the provisions of this agreement.

(d) Construction Account.—A separate account or accounts (herein collectively called the "Construction Account") shall be set up in a bank or banks which are members of the Federal Deposit Insurance Corporation and of the Federal Reserve System. The grant payments, the proceeds from the sale of the bonds (exclusive of accrued interest and an amount, if any, representing interest during construction) and any other moneys which shall be required in addition to the foregoing to pay the cost of constructing the Project shall be deposited in the Construction Account, promptly upon the receipt thereof. All accrued interest paid by the Government at the time of delivery of the bonds shall be paid into a separate account (herein called the "Bond Fund"). Payments for the construction of the Project shall be made only from the Construction Account.

(e) Disbursement of Moneys in Construction Account.—Moneys in the Construction Account shall be expended only for such purposes as shall have been previously specified in the certificate of purposes filed with and accepted by the Government. All moneys remaining in the Construction Account after all costs incurred in connection with the Project have been paid shall either be used to purchase bonds, if any of the bonds are then held by the Government, or be transferred to the Bond Fund.

(f) Use of Moneys in Bond Fund.—Moneys in the Bond fund shall be expended solely for the purpose of paying interest on and principal of the bonds purchased pursuant to this agreement.

12. Construction of Project.—It is mutually agreed that the Project will be constructed in accordance with the following principles:

[fol. 4112] (a) That, in order to insure completion of the project within the funds available for the construction thereof, faithful performance of construction contracts will

DEFENDANTS' EXHIBIT No. 18

be assured by requiring performance bonds written in an amount equal to 100% of the contract price by one or more corporate sureties financially able to assume the risk and that such bonds will be further conditioned upon the payment of all persons supplying labor and furnishing materials for the construction of the Project, unless it is required by the laws of Tennessee that protection for labor and materialmen be provided by a bond separate from the performance bond. In such latter case, a performance bond in an amount equal to 100% of the contract price supplemented by a separate labor and materialmen's bond in an amount not less than 50% of the contract price will be adequate.

(b) That, if the work on any proposed construction contract is hazardous, the contractor will be required to provide public liability insurance in amounts reasonably sufficient to protect the contractor.

(c) That minimum or other wage rates required to be predetermined by the law of Tennessee or local ordinance [fol. 4113] shall be predetermined by the Applicant in accordance therewith, and incorporated in the appropriate contract documents. In the absence of applicable law or ordinance, the Applicant shall predetermine minimum wage rates, in accordance with customary local rates, for all the trades and occupations to be employed on the Project, and incorporate them in the appropriate contract documents.

(d) That the work shall be commenced as quickly as possible after funds are made available and be continued to completion with all practicable dispatch in an efficient and economical manner.

(e) That all work to be performed under contracts to be let hereafter shall be performed in accordance with the provisions of the attached Exhibit A which is hereby made a part hereof; to insure this purpose appropriate provisions will be incorporated in all contracts (except subcontracts) for work to be performed at the site of the Project. (Exhibit A has been so worded that the provisions thereof may, if the Applicant desires, be inserted verbatim in such construction contract or contracts.) If any of the provisions [fol. 4114] contained in Paragraphs 5 to 16, inclusive, of

DEFENDANTS' EXHIBIT No. 18

Exhibit A shall be held invalid, such invalidity shall not affect the validity and effectiveness of the other provisions of this agreement.

13. The Administrator shall have no rights or power of any kind with respect to the rates to be fixed or charged by the Project.

14. This agreement is made with the express understanding that neither the loan nor the grant herein described is conditioned upon compliance by the Applicant with any conditions not expressly set forth herein.

15. The parties hereto expressly agree that this entire contract is made subject to and shall be inoperative except to the extent that it is not in violation of the terms of the injunction granted March 26, 1935, and the decree entered by the Chancellor for Knox County, Tennessee on July 23, 1935, in the case of Tennessee Public Service Company vs. City of Knoxville and others and that to the extent that it is not in conformity with such decree it shall not become operative unless and until such decree is vacated or appropriately modified.

In Witness Whereof, the Applicant and the Government have respectively caused this Agreement to be duly executed as of February 20, 1936.

City of Knoxville, by — — —, United States of America. Federal Emergency Administrator of Public Works, by — — —, Assistant Administrator. (Seal.)

Attest: — — —.

[fol. 4115] DEFENDANTS' EXHIBIT No. 19

Amendatory Loan Agreement, Dated as of May 27, 1935,
Between the City of Decatur, Alabama (Herein Called the
"Borrower"), and the United States of America (Herein
Called the "Government")

(Docket No. 6587)

Whereas, the parties hereto entered into an Agreement dated December 6, 1934, whereby the Borrower agreed to sell and the Government agreed to purchase bonds of the Borrower pursuant to a resolution of the Administrator and Special Board of the Federal Emergency Administration of Public Works, to aid the Borrower in financing a project consisting of the construction of an electrical distribution system, including the low side of the sub-station and equipment, and

Whereas, it is for the mutual benefit of both parties hereto to amend said Agreement dated December 6, 1934.

Now, Therefore, this Agreement witnesseth:

That, the said Agreement dated December 6, 1934, be and is hereby amended as follows:

By deleting from said Agreement paragraph 13 (g), Part One.

It is Hereby Mutually Understood and Agreed, except as herein above provided, that all of the terms and conditions of the Agreement dated December 6, 1934, shall apply and [fol. 4116] be considered a part of this Agreement.

In Witness Whereof, the City of Decatur, Alabama, and the United States of America, have respectively caused this Agreement to be duly executed as of the day and year first above written.

City of Decatur, Alabama, by James A. Nelson,
Mayor. (Seal.)

Attest: By E. W. Collier, City Clerk.

United States of America, by Horatio B. Hackett,
Assistant Federal Emergency Administrator of
Public Works.

Docket No. 6587.

[fol. 4117] DEFENDANTS' EXHIBIT No. 20

Agreement Dated as of December 2, 1935, Termination the Loan and Grant Agreement Dated as of December 6, 1934, and the Amendatory Loan Agreement Dated as of May 27, 1935, Between the City of Decatur, Morgan County, Alabama (Herein Called the "City") and the United States of America (Herein Called the "Government")

Whereas a Loan and Grant Agreement was entered into by and between the City and the Government dated as of December 6, 1934, and

Whereas said Loan and Grant Agreement was amended by an Amendatory Loan Agreement by and between the City and the Government dated as of May 27, 1935, and

Whereas it is to the mutual advantage of the City and the Government to terminate said Loan and Grant Agreement and said Amendatory Loan Agreement,

Now, Therefore, it is Hereby Agreed by and between the City and the Government that said Loan and Grant Agreement dated as of December 6, 1934, and said Amendatory Loan Agreement dated as of May 27, 1935, be and the same hereby are terminated.

City of Decatur, by ———, Mayor. United States of America, Federal Emergency Administrator of Public Works, by ———, Assistant Administrator. (Seal.)

Attest: ———, City Clerk.

[fol. 4118] DEFENDANTS' EXHIBIT No. 21

• • • • •

Accepted by Applicant. Date: December 7, 1935.

Federal Emergency Administration of Public Works

Washington, D. C., December 4, 1935.

PWA Docket No. 6587

CITY OF DECATUR,

Morgan County, Alabama:

1. Offer.—The United States of America (herein called the "Government") hereby offers to aid in financing the

DEFENDANTS' EXHIBIT No. 21

construction of an electrical distribution system, including the low side of the substation and equipment (herein called the "Project") by making a loan and grant to the City of Decatur, Alabama (herein called the "Applicant") in an amount not exceeding in the aggregate the sum of \$350,000.

2. Method of Making Loan.—The Government will purchase from the Applicant, at the principal amount thereof plus accrued interest, obligations of the description set forth below (or such other description as shall be mutually satisfactory) in the aggregate principal amount of \$268,000, less such amount of such obligations, if any, as the Applicant may sell the purchaser other than the Government:

- (a) Obligor: City of Decatur;
- (b) Type: Special obligation, serial, coupon bond;
- (c) Denomination: \$1,000;
- (d) Date September 1, 1934;
- (e) Interest rate and interest payment dates: Four per cent per annum, payable on March 1, 1935, and semi-annually thereafter on September 1 and March 1 in each year;
- (f) Place of Payment: At the office of the City Treasurer, Decatur, Alabama, or, at the option of the holder, at a bank or trust company in the Borough of Manhattan, City and State of New York;
- (g) Registration privileges: At the option of the holder, as to principal only;
- (h) Maturities: On September 1 in years and amounts as follows:

1937-1940	\$9,000
1941 and 1942	12,000
1943 and 1944	14,000
1945-1954 incl.	18,000

[fol. 4120] (i) Security: Payable solely from and secured only by a first pledge of the revenues derived from the operation of the Project, after provision only for the reasonable cost of operation and maintenance thereof.

3. Amount of Grant.—The Government will make a grant in an amount equal to 30 per centum of the cost of the labor and materials employed upon the Project. The Gov-

DEFENDANTS' EXHIBIT No. 21

ernment will make the grant either wholly by the payment of money, or partly by the payment of money and partly by the cancellation of obligations purchased pursuant to this offer or interest coupons attached thereto, in aggregate amount equal to the amount of the grant less the amount in money. In no event shall the grant, whether made partly by payment or money and partly by cancellation, or wholly by payment of money, be in excess of \$100,000.

4. Conditions Precedent.—The Government will be under no obligation to take up and pay for any bonds which it herein offers to purchase or to make any grant;

(a) Financial Condition.—If the financial condition of the Applicant shall have changed unfavorably in a material degree from its condition as theretofore represented to the Government;

(b) Cost of Project.—If it appears that the Applicant will not be able to complete the Project described in this offer for the sum allotted by the Government, or that the [fol. 4121] Applicant will not be able to obtain any funds which, in addition to such sum, shall be necessary to complete the Project;

(c) Plans and Specifications and Certificate of Purposes.—If the Applicant shall not have filed with the Government plans and specifications for the Project accompanied by a certificate of purposes setting out in detail the amounts and purposes of the expenditures which the Applicant proposes to make in connection with the Project, and the Government shall not have accepted such plans and specifications and such certificate of purposes as showing that the Project will be constructed in such manner as to provide reasonable security for the loan to be made by the Government and to comply with Title II of the National Industrial Recovery Act in all other respects.

5. Interest of Member of Congress.—No member of or Delegate to the Congress of the United States of America shall be allowed to participate in the funds made available for the construction of the Project or to any benefit arising therefrom.

DEFENDANTS' EXHIBIT No. 21

6. Bonus or Commission.—The Applicant shall not pay any bonus or commission for the purpose of obtaining an approval of the application.

7. Information.—The Applicant shall furnish the Government with reasonable information and data concerning the construction, cost, and progress of the work. Upon request the Applicant shall also furnish the Government, [fol. 4122] and any purchaser from the Government of at least 25 per cent of the bonds, with adequate financial statements and other reasonable information and data relating to the Applicant.

8. Bond Circular.—The Applicant shall furnish all such information in proper form for the preparation of a bond circular and shall take all such steps as the Government or any purchaser or purchasers from the Government of not less than 25 per cent of the bonds may reasonably require to aid in the sale by the Government or any such purchaser or purchasers of any or all of the bonds.

9. Insurance.—The Applicant shall carry reasonable and adequate insurance upon the completed Project or any completed part thereof accepted by the Applicant or the system of which the Project is a part.

10. Name of Project.—The Applicant shall not name the Project for any living person.

11. Grant and Bond Payments.

(a) Advance Grant.—Upon receipt of this offer, the Applicant may request an advance on account of the grant in an amount not exceeding 5 per cent of the estimated cost of labor and materials to be employed on the Project. This advance grant may be used for paying architectural, engineering, and planning fees, costs of surveys, borings and other preliminary investigations, cost of preparation of plans, specifications and other forms of proposed contract [fol. 4123] documents, and costs of advertisements for bids for contracts, and the printing of the bonds, but not in payment for the acquisition of lands, easements, or rights-of-way. The request for this advance shall be accompanied by a signed certificate of purposes in which shall appear in

DEFENDANTS' EXHIBIT No. 21

reasonable detail the purposes for which such advance grant will be used.

(b) **Payment for Bonds.**—A requisition requesting the Government to take up and pay for bonds will be honored as soon as possible after such bonds are ready for delivery, if the bond transcript and other documents supporting such requisitions are complete.

(c) **Intermediate Grant Requisitions.**—Simultaneously with the delivery of and payment for the bonds by the Government, or, when bonds are taken up and paid for in more than one installment, simultaneously with the delivery of and payment for the final installment, if the Applicant has so requisitioned and if such requisition is accompanied by a signed certificate of purposes showing in reasonable detail the purposes for which the funds will be used, and that such funds will be used for items properly included as part of the cost of the Project, the Government will make a grant of an amount representing the difference between the advance grant and an amount equal to 15 per cent of said previously estimated cost of labor and materials to be employed upon the Project. When the Project shall be approximately 70 per cent completed the Applicant may file [fol. 4124] its requisition for an additional grant in an amount which, together with the amount previously paid on account of the grant, is equal to 30 per cent of the cost of labor and materials theretofore employed on the Project, but in no event in an amount exceeding the amount set forth in paragraph 3 hereof.

The intermediate grant requisitions will be honored if the documents necessary to support such requisitions are complete and work on the Project has progressed in accordance with the provisions of this offer relating thereto.

(d) **Final Grant Payment.**—At any time after completing the Project, the Applicant may file a requisition requesting the remainder of the grant which, together with all previous payments on account of such grant, shall be an amount not in excess of 30 per cent of the actual cost of labor and materials employed upon the Project, and not to exceed, in any event, the amount of the grant set forth in paragraph 3 hereof. The final grant requisition will be honored if the

DEFENDANTS' EXHIBIT No. 21

documents necessary to support it are complete and work on the Project has been completed in accordance with the provisions of this offer relating thereto.

(e) Construction Account.—A separate account or accounts (herein collectively called the "Construction Account") shall be set up in a bank or banks which are members of the Federal Deposit Insurance Corporation and of the Federal Reserve System. The advance grant, the [fol. 4125] intermediate grants, the proceeds from the sale of the bonds (exclusive of accrued interest and an amount, if any, representing interest during construction), the final grant, and any other moneys which shall be required in addition to the foregoing, to pay the cost of constructing the Project shall be deposited in the Construction Account, promptly upon the receipt thereof. All accrued interest paid by the Government at the time of delivery of the bonds shall be paid into a separate account (herein called the "Bond Fund"). Payments for the construction of the Project shall be made only from the Construction Account.

(f) Disbursement of Moneys in Construction Account.—Moneys in the Construction Account shall be expended only for such purposes as shall have been previously specified in the certificate of purposes filed with and accepted by the Government. All moneys remaining in the Construction Account after all costs incurred in connection with the Project have been paid shall either be used to repurchase bonds, if any of the bonds are then held by the Government, or be transferred to the Bond Fund.

(g) Use of Moneys in Bond Fund.—Moneys in the Bond Fund shall be expended solely for the purpose of paying interest on and principal of bonds.

12. Construction of Project.—The following policies have been adopted by the Federal Emergency Administration of Public Works in order to effectuate the purposes of Title [fol. 4126] II of the National Industrial Recovery Act, and the making of the loan and grant herein set forth shall be subject to the condition that the Applicant, in the exer-

DEFENDANTS' EXHIBIT No. 21

cise of its lawful discretion, shall adopt said policies and comply therewith in the construction of the Project:

(a) That if a project is to be constructed under contract, contracts should be awarded to the lowest responsible bidder pursuant to public advertisement and that every opportunity be given for free, open and competitive bidding for contracts for construction and contracts for the purchase of materials and equipment.

(b) That the use in the specifications or otherwise of the name of a proprietary product or the name of the manufacturer or vendor to define the material or product required, unless such name is followed by the term "or equal", is considered contrary to the policy of free, open and competitive bidding. Where such a specification is used in lieu of descriptive detail of substance and function, the term "or equal" is to be literally construed so that any material or article which will perform adequately the duties imposed by the general design will be considered satisfactory.

(c) That, in determining the lowest bidder for the supplying of materials and equipment, in the interest of standardization or ultimate economy, the contract may be awarded to other than the actual lowest bidder.

(d) That, in order to insure completion of a project [fol. 4127] within the funds available for the construction thereof, faithful performance of construction contracts will be assured by requiring performance bonds written in an amount equal to 100% of the contract price by — or more corporate sureties financially able to assume the risk and that such bonds will be further conditioned upon the payment of all persons supplying labor and furnishing materials for the construction of such project, except in cases in which it is required by the laws of Alabama that protection for labor and materialmen be provided by a bond separate from the performance bond. In such latter case, a performance bond in an amount equal to 100% of the contract price supplemented by a separate labor and materialmen's bond in an amount not less than 50% of the contract price will be adequate.

DEFENDANTS' EXHIBIT No. 21

(e) That, if the work on any proposed construction contract is hazardous, the contractor will be required to provide public liability insurance and property damage insurance in amounts reasonably sufficient to protect the contractor and each subcontractor.

(f) That minimum or other wage rates required to be predetermined by the law of Alabama or local ordinance shall be predetermined by the applicant in accordance therewith, and incorporated in the appropriate contract documents. In the absence of applicable law or ordinance, the applicant shall predetermine minimum wage rates, in accordance with customary local rates, for all the trades and occupations to be employed on the project, and incorporate [fol. 4128] them in the appropriate contract documents.

(g) That the work shall be commenced as quickly as possible after funds are made available and be continued to completion with all practicable dispatch in an efficient and economical manner.

(h) That a project will be constructed in accordance with the provisions of the attached Exhibit A which is hereby made a part hereof; to insure this purpose appropriate provisions will be incorporated in all contracts (except subcontracts for work to be performed at the site of the project. (Exhibit A has been so worded that the provisions thereof, may, if the applicant so desires, be inserted verbatim in such construction contract or contracts.)

13. The Administrator and the Government shall have no rights or power of any kind with respect to the rates to be fixed or charged by the project, excepting only such rights as they may have as a holder of such bonds under the Constitution and laws of Alabama and the lawful proceedings of the Applicant, taken pursuant thereto, in authorizing the issuance of such bonds.

14. This offer is made with the express understanding that neither the loan nor the grant herein described is conditioned upon compliance by the Applicant with any conditions not expressly set forth herein. There are no other agreements or understandings between the Applicant and

DEFENDANTS' EXHIBIT No. 21

the Government or any of its agencies in any way relating [fol. 4129] to said Project or to the financing or the construction thereof.

United States of America, Federal Emergency Administrator of Public Works, (Sgd.) By Horatio B. Hackett, Assistant Administrator.

[fol. 4130] DEFENDANTS' EXHIBIT No. 22

Amendatory Loan Agreement Dated as of March 26, 1935, Between the City of Tuscumbia, Alabama (Herein Called the "Borrower"), and the United States of America (Herein Called the "Government")

(Docket No. 3125)

Whereas, the parties entered hereto into an Agreement dated December 28, 1934, whereby the Borrower agreed to sell and the Government agreed to purchase bonds of the Borrower pursuant to a resolution of the Administrator and Special Board of the Federal Emergency Administration of Public Works, to aid the Borrower in financing a project consisting of the construction of an electric transmission line and distribution system, and other necessary appurtenances thereto, and

Whereas, it is for the mutual benefit of both parties hereto to amend said agreement dated December 28, 1934.

Now, Therefore, this Agreement witnesseth:

That, the said Agreement dated December 28, 1934, be and is hereby amended as follows:

By deleting from said Agreement Paragraph 4 (f), Part One.

It is Hereby Mutually Understood and Agreed, except as herein above provided, that all of the terms and conditions of the Agreement dated December 28, 1934, shall apply and be considered a part of this Agreement.

In Witness Whereof, the City of Tuscumbia, Alabama, and the United States of America, have respectively caused

DEFENDANTS' EXHIBIT No. 22

[fol. 4131] this Agreement to be duly executed as of the day and year first above written.

City of Tuscumbia, Alabama, by W. L. Farr, Mayor.
 United States of America, by Philip B. Fleming,
 Acting Deputy Federal Emergency Administrator
 of Public Works. (Seal.)

Attest: by I. L. Hay, City Clerk.

Docket No. 3125.

[fol. 4132] DEFENDANTS' EXHIBIT No. 23

Agreement dated as of December 2, 1935, Terminating the Loan and Grant Agreement Dated as of December 28, 1934, and the Amendatory Loan Agreement Dated as of March 26, 1935, Between the City of Tuscumbia, Colbert County, Alabama (Herein Called the "City") and the United States of America (Herein Called the "Government")

Whereas a Loan and Grant Agreement was entered into by and between the City and the Government dated as of December 28, 1934, and

Whereas said Loan and Grant Agreement was amended by an Amendatory Loan Agreement by and between the City and the Government dated as of March 26, 1935, and

Whereas it is to the mutual advantage of the City and the Government to terminate said Loan and Grant Agreement and said Amendatory Loan Agreement,

Now, Therefore, it is Hereby Agreed by and between the City and the Government that said Loan and Grant Agreement dated as of March 26, 1935, be and the same hereby are terminated.

City of Tuscumbia, Alabama, by W. L. Farr, Mayor.
 United States of America, Federal Emergency Administrator of Public Works, by Horatio B. Hackett, Assistant Administrator. (Seal.)

Attest: I. L. Hay, City Clerk.

Docket No. 3125.

[fol. 4133] DEFENDANTS' EXHIBIT No. 24

Offer on December 4, 1935, by the Federal Emergency Administration of Public Works to make a loan and grant in the amount of \$130,000 to the City of Tusculumbia, Alabama, for the construction of an electric transmission line and distribution system, accepted by said city on December 9, 1935.

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Defendants' Exhibit No. 21.

[fol. 4134] DEFENDANTS' EXHIBIT No. 25

Amendatory Loan Agreement, Dated as of June 6, 1935, Between the City of Sheffield, Alabama (Herein Called the "Borrower") and the United States of America (Herein Called the "Government")

Whereas, the parties hereto entered into an Agreement dated December 28, 1934, whereby the Borrower agreed to sell and the Government agreed to purchase bonds of the Borrower pursuant to a Resolution of the Administrator and Special Board of the Federal Emergency Administration of Public Works, to aid the Borrower in financing a project consisting of the construction of an electric transmission line and distribution system, and other necessary appurtenances thereto, and

Whereas, it is for the mutual benefit of both parties hereto to amend said Agreement dated December 28, 1934.

Now, Therefore, This Agreement Witnesseth:

That, the said Agreement dated December 28, 1934, be and is hereby amended as follows:

By striking out the date "June 1, 1934, in Paragraph 2 (e), Part One, of said Agreement and inserting in lieu thereof the date "April 1, 1935"; and

By striking out the words "At the rate of 4 per cent per annum, payable December 1, 1934, and semiannually thereafter on June 1 and December 1 in each year" in Paragraph [fol. 4135] 2(f), Part One, of said Agreement and inserting in lieu thereof the words "At the rate of 4 per cent per annum, payable October 1, 1935, and semiannually thereafter on April 1 and October 1 in each year"; and

By striking out the date "June 1" in Paragraph 2 (g), Part One, of said Agreement and inserting in lieu thereof the date "April 1"; and

DEFENDANTS' EXHIBIT No. 25

By striking out the maturities of the bonds in Paragraph 2 (g), Part One, of said Agreement and inserting in lieu thereof the following maturities:

Year	Amount	Year	Amount
1938.....	\$10,000	1946	\$11,000
1939.....	10,000	1947	12,000
1940.....	10,000	1948	12,000
1941.....	10,000	1949	12,000
1942.....	10,000	1950	12,000
1943.....	10,000	1951	12,000
1944.....	10,000	1952	12,000
1945.....	10,000	1953	12,000
		1954	12,000

It is Hereby Mutually Understood and Agreed except as hereinabove provided, that all of the terms and conditions of the Agreement dated December 28, 1934, shall apply and be considered a part of this Agreement.

In Witness Whereof, the City of Sheffield, Alabama, and the United States of America, have respectively caused this [fol. 4136] Agreement to be duly executed as of the day and year first above written.

City of Sheffield, Alabama, by W. H. Richeson, Chairman, Board of Commissioners. United States of America, by Harold L. Ickes, Federal Emergency Administrator of Public Works. (Seal.)

Attest: by Peter Schaut, City Clerk.

[fol. 4137] DEFENDANTS' EXHIBIT No. 26

Agreement Dated as of December 2, 1935, Terminating the Loan and Grant Agreement Dated as of December 28, 1934, the Amendatory Loan Agreement Dated as of April 6, 1935, and the Amendatory Loan Agreement Dated as of June 6, 1935, between the City of Sheffield, Colbert County, Alabama (Herein Called the "City") and the United States of America (Herein Called the "Government")

Whereas a Loan and Grant Agreement was entered into by and between the City and the Government dated as of December 28, 1934, and

DEFENDANTS' EXHIBIT 26

Whereas said Loan and Grant Agreement was amended by an Amendatory Loan Agreement by and between the City and the Government dated as of April 6, 1935, and

Whereas said Loan and Grant Agreement was further amended by an Amendatory Loan Agreement by and between the City and the Government dated as of June 6, 1935, and

Whereas it is to the mutual advantage of the City and the Government to terminate said Loan and Grant Agreement and said Amendatory Loan Agreements,

Now, Therefore, It is Hereby Agreed by and between the city and the Government that said Loan and Grant Agreement dated as of December 28, 1934, said Amendatory Loan Agreement dated as of April 6, 1935, and said Amendatory Loan Agreement dated as of June 6, 1935, be and the same hereby are terminated.

City of Sheffield, by — —, United States of America, Federal Emergency Administrator of Public Works, by — —, Assistant Administrator. (Seal.)

Attest: — —.

[fol. 4138] DEFENDANTS' EXHIBIT No. 27

Offer dated December 4, 1935, by the Federal Emergency Administration of Public Works to the City of Sheffield, Alabama, for a loan and grant in the amount of \$230,000 for the construction of an electric transmission line and distribution system, accepted by said city on December 7, 1935.

To avoid repetition this exhibit is not set out herein at length. It is substantially the same as Defendants' Exhibit No. 21.

[fol. 4139] DEFENDANTS' EXHIBIT No. 28

Resolution of the Board of Directors of TVA Adopted
March 5, 1936

Whereas, Under date of July 26, 1934, the Authority entered into a contract with the Tennessee Public Service Company by the terms of which the Authority agreed to

DEFENDANTS' EXHIBIT No. 28

buy and the Company agreed to sell certain electric transmission and distribution properties located in Knox County, Tennessee, all of which is more particularly described in said contract, and

Whereas, By Section XIV of said contract, the parties agreed that unless a closing date on or before September 30, 1934, for the consummation of the purchase and sale of said properties was fixed, neither party should, after said date, be under any further obligation under said agreement except by mutual consent, and

Whereas, The Board of Directors is satisfied that it is not for the best interest of the Authority to purchase said property, or any part thereof, under the terms and conditions contained in said agreement, therefore

Be it Resolved, That the Authority hereby abandons and terminates any rights it may have to execute any part of said agreement, and that said agreement, insofar as it remains in effect, is hereby terminated and rescinded.

Further Resolved, That any offers or tenders made by the Authority for the properties referred to in said contract are hereby withdrawn and revoked.

[fol. 4140] DEFENDANTS' EXHIBIT No. 29

Resolution of the Board of Directors of TVA, Adopted
October 4, 1935

Whereas, On August 25, 1933, the Board released a statement setting forth a policy with reference to the generation, transmission, and disposition of surplus power by the Authority, such policy being commonly known as the "Power Policy," and

Whereas, Recent amendments to the Tennessee Valley Authority Act of 1933, and legislation passed by the legislatures of the various states of the Tennessee Valley during the past two years affect the policy of the Authority with regard to the transmission and disposition of surplus power, and

Whereas, Two years of experience in administering that part of the Authority's general program relating to the disposition of surplus power has made it advisable to re-

DEFENDANTS' EXHIBIT No. 29

state the principles governing the administration of such program, therefore

Be it Resolved, That the statement released on August 25, 1933, heretofore described and commonly known as the "Power Policy," is hereby rescinded and withdrawn.

Further Resolved, That the Board of Directors hereby appoints and instructs the following committee to formulate and submit to the Board its recommendations for a Statement of Policy setting forth the principles applicable to the disposition of surplus power in the light of recent statutory changes and the Authority's administrative experience:

David E. Lilienthal, Chairman. Llewellyn Evans.

Barton M. Jones. C. Neil Bass. Wm. J. Hayes.

[fol. 4141] DEFENDANTS' EXHIBIT No. 30

Chart Entitled "Gross Waterborne Commerce on Inland Waterways of the United States, 1919-1934"

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 31

Map entitled "Alluvial Valley of the Mississippi River".

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 32

House Document 259, 74th Congress 1st Session.

(Original Exhibit)

[fol. 4142] DEFENDANTS' EXHIBIT No. 33 (Excluded)

Chart entitled "Hydrograph of Hudson River at Spier Falls Showing Effect of Sacandaga Reservoir In Reducing Flood of March 1936".

(Omitted)

DEFENDANTS' EXHIBIT No. 34 (Excluded)

Chart entitled "Hydrograph of Hudson River at Spier Falls Showing Sacandaga Reservoir Regulation For 1936."

(Omitted)

DEFENDANTS' EXHIBIT No. 35 (Excluded)

Chart entitled "Daily Water Surface Elevations—Sacandaga Reservoir".

(Omitted)

[fol. 4143] DEFENDANTS' EXHIBIT No. 36

Map entitled "Tennessee River Drainage Basin."

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 37

Photograph of scale model of Chickamauga Dam.

(Original Exhibit)

[fol. 4144] DEFENDANTS' EXHIBIT No. 38

Chart entitled "Tennessee River Dams".

(Original Exhibit)

Gilbertsville Project

(Tentative, Not Adopted)

1. Location	
Miles above mouth of river	22.7
2. Drainage area above dam, sq. mi.	40,000
3. Length of reservoir (navigation pool), miles	184
4. Elevation of top of gates	375
5. Volume of reservoir at top of gates, acre-feet	6,150,000
6. Navigation level	350
(Elevation at dam which will provide minimum 11-foot depth at lock up- stream during high-water season.)	
7. Volume of reservoir at navigation level, acre-feet	1,350,000
8. Depth of surcharge (line 4 minus line 6), feet	25
9. Controlled flood surcharge, acre-feet ...	4,600,000
(Line 5 minus line 7.)	
10. Elevation of fixed spillway crest	330
11. Volume of reservoir below fixed spill- way crest	356,000
12. Crest gates, length ft. by height ft.	24-40 x 45
13. Lock chamber clear dimension, feet	110 x 600
14. Number and capacity of units authorized	None.
15. Number of stalls provided for addi- tional units	6-32,000 kw.
16. Approximate discharge capacity per unit, sec. ft.	9,000

Chart entitled "Tennessee River Dams".

(Original Exhibit)

[fol. 4147] DEFENDANTS' EXHIBIT No. 41

Resolution of the Board of Directors of TVA, adopted July 20, 1937.

Resolved,

1. That there is hereby established a Water Control Planning Department.

2. Under the direction and general supervision of a Chief Water Control Planning Engineer responsible to the Chief Engineer, the Department shall perform the following duties:

a. Make engineering studies, investigations, surveys, maps, reports, and recommendations involving basic hydraulic, geologic, topographic, and cadastral data needed to determine the necessity and feasibility of projects required in the Authority's integrated program of river control, and to make these and other related data available as are required in the planning, location, design, construction and operation of dams, reservoirs, locks, powerhouses and other structures and physical facilities as are approved for such a program.

b. Prepare and issue instructions subject to review by the Chief Engineer governing the impounding and release of water at the various dams of the Authority to assure the maximum use of facilities and resources available for flood control, navigation and other purposes consistent with the requirements of the Tennessee Valley Authority Act and within the policies of the Board pursuant thereto; to define from time to time the extent to which water may be impounded and the stream flow limits within which impounded water may be used for the generation of electric power.

c. Coordinate and integrate its engineering planning activities with those of other Federal, state and local agencies engaged in similar work whenever feasible and consistent with economy of effort and the purposes of the Act.

d. Coordinate its studies, findings, reports and recommendations with the studies and recommendations and needs of other departments of the Authority to assure maximum attainment of the purposes of the Act and the policies of [fol. 4148] the Board in the development of a regional approach to the problems of water control on the rivers and on the land.

Pickwick Project

1. Location	
Miles above mouth of river	206.7
2. Drainage area above dam, sq. mi.	32,870
3. Length of reservoir (navigation pool), miles	50.1
4. Elevation of top of gates	418
5. Volume of reservoir at top of gates, acre-feet	1,032,000
6. Navigation level	408
(Elevation at dam which will provide minimum 11-foot depth at lock up- stream during high-water season.)	
7. Volume of reservoir at navigation level, acre-feet	616,000
8. Depth of surcharge, ft. (line 4 minus line 6)	10
9. Controlled flood surcharge, acre-feet...	416,000
(Line 5 minus line 7.)	
10. Elevation of fixed spillway crest	378
11. Volume of reservoir below fixed spill- way crest	60,000
12. Crest gates, length ft. by height ft.	22-40 x 40
13. Lock chamber clear dimension, feet	110 x 600
14. Number and capacity of units author- ized	2-36,000 kw.
15. Number of stalls provided for addi- tional units	4-36,000 kw.
16. Approximate discharge capacity per unit, sec.-ft.	11,600

[fol. 4150] DEFENDANTS' EXHIBIT No. 43

Wheeler Project

1. Location	
Miles above mouth of river	274.9
2. Drainage area above dam, sq. mi.	30,800
3. Length of reservoir (navigation pool), miles	74.1
4. Elevation of top of gates	556
5. Volume of reservoir at top of gates, acre-feet	1,030,000
6. Navigation level	548
(Elevation at dam which will provide minimum 11-foot depth at lock up- stream during high-water season.)	
7. Volume of reservoir at navigation level, acre-feet	590,000
8. Depth of surcharge, ft. (line 4 minus line 6)	8
9. Controlled flood surcharge, acre-feet . .	440,000
(Line 5 minus line 7.)	
10. Elevation of fixed spillway crest	541
11. Volume of reservoir below fixed spill- way crest	400,000
12. Crest gates, length ft. by height ft. . . .	60-40 x 15
13. Lock chamber clear dimension, feet	60 x 360
14. Number and capacity of units author- ized	2-32,000 kw.
15. Number of stalls provided for addi- tional units	6-32,000 kw.
16. Approximate discharge capacity per unit, sec.-ft.	9,500

[fol. 4151] DEFENDANTS' EXHIBIT No. 44

Chart entitled "Tennessee River Dams"
(Original Exhibit)

Guntersville Project

1. Location	
Miles above mouth of river	349.0
2. Drainage area above dam, sq. mi.....	24,300
3. Length of reservoir (navigation pool), miles	82.1
4. Elevation of top of gates	595
5. Volume of reservoir at top of gates, acre-feet	951,000
6. Navigation level	591
(Elevation at dam which will provide minimum 11-foot depth at lock up- stream during high-water season.)	
7. Volume of reservoir at navigation level, acre-feet	709,000
8. Depth of surcharge, ft. (Line 4 minus line 6)	4
9. Controlled flood surcharge, acre-feet...	242,000
(Line 5 minus line 7.)	
10. Elevation of fixed spillway crest.....	555
11. Volume of reservoir below fixed spill- way crest	15,000
12. Crest gates, length ft. by height ft.	18-40 x 40
13. Lock chamber clear dimension, feet	60 x 360
14. Number and capacity of units author- ized	3-25,000 kw.
15. Number of stalls provided for additional units	1-25,000 kw.
16. Approximate discharge capacity per unit, sec. ft.	11,000

[fol. 4153] DEFENDANTS' EXHIBIT No. 45A

Guntersville Project

1. Location	
Miles above mouth of river	349.00
2. Drainage area above dam, sq. mi.	24,300
3. Length of reservoir (navigation pool), miles	82.1
4. Elevation of top of gates	595
5. Volume of reservoir at top of gates, acre-feet	951,000
6. Navigation level	591
(Elevation at dam which will provide minimum 11-foot depth at lock upstream during high-water season.)	
7. Volume of reservoir at navigation level, acre-feet	709,000
8. Depth of surcharge, ft. (Line 4 minus line 6)	4
9. Controlled flood surcharge, acre-feet	242,000
(Line 5 minus line 7.)	
10. Elevation of fixed spillway crest	555
11. Volume of reservoir below fixed spill- way crest	15,000
12. Crest gates, length ft. by height ft.	18-40 x 40
13. Lock chamber clear dimension, feet	60 x 360
14. Number and capacity of units author- ized	3-24,000 kw.
15. Number of stalls provided for additional units	1-24,000 kw.
16. Approximate discharge capacity per unit, sec.-ft.	11,000

Chickamauga Project

1. Location	
Miles above mouth of river	471.0
2. Drainage area above dam, sq. mi.	20,800
3. Length of reservoir (navigation pool), miles	58.9
4. Elevation of top of gates	685
5. Volume of reservoir at top of gates, acre-feet	639,000
6. Navigation level	673.5
(Elevation at dam which will provide minimum 11-foot depth at lock upstream during high-water season.)	
7. Volume of reservoir at navigation level, acre-feet	314,000
8. Depth of surcharge, ft. (Line 4 minus line 6)	11.5
9. Controlled flood surcharge, acre-feet ...	325,000
(Line 5 minus line 7.)	
10. Elevation of fixed spillway crest	645
11. Volume of reservoir below fixed spill- way crest	25,000
12. Crest gates, length ft. by height ft.	20-40 x 40
13. Lock chamber clear dimension, feet	60 x 360
14. Number and capacity of units author- ized	3-25,000 kw.
15. Number of stalls provided for additional units	1-25,000 kw.
16. Approximate discharge capacity per unit, sec-ft.	11,000

[fol. 4155] DEFENDANTS' EXHIBIT No. 46A

Chickamauga Project

1. Location	
Miles above mouth of river	471.0
2. Drainage area above dam, sq. mi.	20,800
3. Length of reservoir (navigation pool), miles	58.9
4. Elevation of top of gates	685
5. Volume of reservoir at top of gates, acre-feet	639,000
6. Navigation level	673.5
(Elevation at dam which will provide minimum 11-foot depth at lock upstream during high-water season.)	
7. Volume of reservoir at navigation level, acre-feet	314,000
8. Depth of surcharge, ft. (Line 4 minus line 6)	11.5
9. Controlled flood surcharge, acre-feet	325,000
(Line 5 minus line 7.)	
10. Elevation of fixed spillway crest	645
11. Volume of reservoir below fixed spillway crest	25,000
12. Crest gates, length ft. by height ft.	20-40 x 40
13. Lock chamber clear dimension, feet	60 x 360
14. Number and capacity of units authorized	3-27,000 kw.
15. Number of stalls provided for additional units	1-27,000 kw.
16. Approximate discharge capacity per unit, sec.-ft.	11,000

Watts Bar Project

(Tentative)

1. Location

Miles above mouth of river	529.9
2. Drainage area above dam, sq. mi.	17,460
3. Length of reservoir (navigation pool), miles	72.1
4. Elevation of top of gates	745
5. Volume of reservoir at top of gates, acre-feet	1,132,000
6. Navigation level	736

(Elevation at dam which will provide minimum 11-foot depth at lock upstream during high-water season.)

7. Volume of reservoir at navigation level, acre-feet	795,000
8. Depth of surcharge, ft. (Line 4 minus line 6)	9
9. Controlled flood surcharge, acre-feet ...	337,000

(Line 5 minus line 7.)

10. Elevation of fixed spillway crest	720
11. Volume of reservoir below fixed spill- way crest	365,000
12. Crest gates, length ft. by height ft.	21-40 x 25
13. Lock chamber clear dimension, feet	60 x 360
14. Number and capacity of units author- ized	None
15. Number of stalls provided for additional units	4-37,500 kw.
16. Approximate discharge capacity per unit, sec.-ft.	10,000

[fol. 4157] DEFENDANTS' EXHIBIT No. 48

Coulter Shoals Project

(Tentative.)

1. Location	
Miles above mouth of river	602.0
2. Drainage area above dam, sq. mi.	9,600
3. Length of reservoir (navigation pool), miles	50
4. Elevation of top of gates	815
5. Volume of reservoir at top of gates, acre-feet	370,000
6. Navigation level	805
(Elevation at dam which will provide minimum 11-foot depth at lock upstream during high-water season.)	
7. Volume of reservoir at navigation level, acre-feet	230,000
8. Depth of surcharge, ft. (Line 4 minus line 6)	10
9. Controlled flood surcharge, acre-feet ..	140,000
(Line 5 minus line 7.)	
10. Elevation of fixed spillway crest	790'
11. Volume of reservoir below fixed spill- way crest	100,000
12. Crest gates, length ft. by height ft.	20-40 x 25
13. Lock chamber clear dimension, feet	60 x 360
14. Number and capacity of units author- ized	None
15. Number of stalls provided for additional units	3-20,000 kw.
16. Approximate discharge capacity per unit, sec.-ft.	6,000

[fol. 4158] DEFENDANTS' EXHIBIT No. 49

Photograph of sections of Norris Dam.

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 50

Chart entitled "Tributary Dams".

(Original Exhibit)

[fol. 4159] DEFENDANTS' EXHIBIT No. 51

Norris Project

1. Location	
Miles above mouth of Clinch	79.8
Miles above mouth of Tennessee	647.5
2. Drainage area, sq. mi.	2950
3. Elevation of top of gate	1034
4. Volume of reservoir at top of gates, acre feet	2,567,000
5. Elevation of fixed spillway crest	1020
6. Volume of reservoir at spillway crest, acre feet	2,047,000
7. Crest gates, length ft. by height ft.	3-100 x 14
8. Capacity of sluice ways, sec. ft. at eleva- tion 1020	36,000
9. Number and capacity of units authorized	2-50,000kw.
10. Number of stalls provided for additional units	none
11. Approximate discharge capacity per unit, sec. ft.	4,300

[fol. 4160] DEFENDANTS' EXHIBIT No. 52

Hiwassee Project

1. Location	
Miles above mouth of Hiwassee	75.8
Miles above mouth of Tennessee	576.3
2. Drainage area, sq. mi.	977
3. Elevation of top of gates	1526.5
4. Volume of reservoir at top of gates, acre- ft.	435,000
5. Elevation of fixed spillway crest	1503.5
6. Volume of reservoir at spillway crest, acre-ft.	310,000
7. Crest gates, length, ft. by height, ft.	7-32 x 23

DEFENDANTS' EXHIBIT No. 52

Hiwassee Project—Continued

8. Capacity of sluiceways, sec.-ft., at elevation 1526	20,000
9. Number and capacity of units authorized	1-60,000 kw.
10. Number of stalls provided for additional units	1-60,000 kw.
11. Approximate discharge capacity per unit, sec.-ft.	4,000

[fol. 4161] DEFENDANTS' EXHIBIT No. 53

Volume of Main River Pools at Various Levels

The reference numbers (1) and (2) given in the tabulation refer to the following levels.

(1) Flat navigation pool level is the flat level throughout the pool which is required to furnish a depth of either 12 feet in the approach to the lock upstream or 11 feet over the lower lock sill.

(2) Normal pool level, as referred to by Tennessee Valley Authority is an arbitrary level, generally defining the maximum level to which the pool will be raised during low water season, except for possibly a temporary rise of one foot above this caused by malaria control fluctuation.

Gilbertsville:	(1) Elevation 354	Volume 2,000,000 acre feet
	(2) " 357	" 2,450,000 " "
		" 2,750,000 " "
Pickwick:	(1) Elevation 408	Volume 616,000 acre feet
	(2) " 413	" 807,000 " "
Wheeler:	(1) Elevation 550	Volume 750,000 acre feet
	(2) " 555	" 1,030,000 " "
Guntersville:	(1) Elevation 593	Volume 824,000 acre feet
	(2) " 594	" 886,000 " "
Chickamauga:	(1) Elevation 575	Volume 345,000 acre feet
	(2) " 582	" 541,000 " "
Watts Bar:	(1) Elevation 536	Volume 795,000 acre feet
	(2) " 540	" 935,000 " "

[fol. 4162] DEFENDANTS' EXHIBIT No. 54

Volume of Main River Pools at Various Levels

The reference numbers (1) and (2) given in the tabulation refer to the following levels:

(1) Flat navigation pool level is the flat level throughout the pool which is required to furnish a depth of either 12 feet in the approach to the lock upstream or 11 feet over the lower lock sill.

(2) Normal pool level, as referred to by Tennessee Valley Authority is an arbitrary level generally defining the maximum level to which the pool will be raised during low water season, except for possibly a temporary rise of one foot above this caused by malaria control fluctuation.

Gilbertsville:

(1)	Elevation 354	Volume 2,000,000 acre feet
(2)	" 357	" 2,450,000 " "
	" 359	" 2,750,000 " "

Pickwick:

(1)	Elevation 408	Volume 616,000 acre feet
(2)	" 413	" 807,000 " "

Wheeler:

(1)	Elevation 550	Volume 750,000 acre feet
(2)	" 555	" 1,030,000 " "

Guntersville:

(1)	Elevation 593	Volume 824,000 acre feet
(2)	" 594	" 886,000 " "

Chickamauga:

(1)	Elevation 675	Volume 345,000 acre feet
(2)	" 682	" 541,000 " "

Watts Bar:

(1)	Elevation 736	Volume 795,000 acre feet
(2)	" 740	" 935,000 " "

Coulter Shoals: (elevations are tentative and volumes approximate pending completion of surveys).

(1)	Elevation 805	Volume 230,000 acre feet
(2)	" 810	" 300,000 " "

[fol. 4163] DEFENDANTS' EXHIBIT No. 55

Map of Chickamauga Reservoir.

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 56

Map of Watts Bar Reservoir and surrounding region.

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 57

Progress Map of Coulter Shoals Reservoir.
(Original Exhibit)

DEFENDANTS' EXHIBIT No. 58

Map of Norris Reservoir and surrounding region.
(Original Exhibit)

DEFENDANTS' EXHIBIT No. 59

Map of Hiwassee Reservoir.
(Original Exhibit)

[fol. 4164] **DEFENDANTS' EXHIBIT No. 60**
Preliminary map of Gilbertsville Reservoir.
(Original Exhibit)

DEFENDANTS' EXHIBIT No. 61

Map of Pickwick Reservoir.
(Original Exhibit)

DEFENDANTS' EXHIBIT No. 62

Map of Muscle Shoals area.
(Original Exhibit)

DEFENDANTS' EXHIBIT No. 63

Map of Wheeler Reservoir and surrounding region.
(Original Exhibit)

DEFENDANTS' EXHIBIT No. 64

Map of Guntersville Reservoir.

(Original Exhibit)

[fol. 4165] DEFENDANTS' EXHIBIT No. 65

Resolution of Board of Directors of Tennessee Valley
Authority

July 1, 1936

226-6. After examining the provisions of Water Control Bulletins No. 1 and No. 2, submitted by the Hydroelectric Committee, and finding them satisfactory, the Board ordered a true copy of each bulletin filed with the Authority's records as Exhibit 7-1-36e, and then issued the following instructions which are to govern the preparation of subsequent bulletins and the administration of the provisions of all water control bulletins hereafter approved by the Board:

1. A Committee on Water Control Operations is created consisting of the Chief Water Control Planning Engineer and the Chief Electrical Engineer. This Committee shall prepare general regulations as to the control of water through the operation of reservoirs. In formulating these regulations, the Committee shall confer with the Chief Construction Engineer, the Chief Medical Officer, the General Solicitor, and the Superintendent of Power Operations, or their representatives. The regulations shall be transmitted to the office of the General Manager in the form of bulletins for submission to the Board of Directors and for general distribution after approval by the Board.

2. The Superintendent of Power Operations shall be responsible for the day to day operation of the gates within the limits of and consistent with the requirements established by the regulatory bulletins of the Committee. He shall fix the responsibility for load dispatching and gate operation at each dam. On dams under construction, a representative of the construction organization shall be designated to operate the gates.

3. The Engineering Data Division shall maintain current records of rainfall, runoff, and river flow, furnish daily

DEFENDANTS' EXHIBIT No. 65

reports and predictions, and designate a representative who will maintain daily contact with the Chief Load Dispatcher at Wilson Dam for the exchange of information.

Water Control Bulletin Number 4

June 30th, 1936

Reservoirs of the Authority are to be operated: First, to serve as navigation channels and maintain navigation depths in the reaches of the river below the reservoirs; and Second, to reduce the magnitude of flood peaks below. Re-[fol. 4166] quirements for the control of malaria and the temporary needs of construction shall be given due consideration. So far as consistent with the above procedure, as much water power available at the dams shall be converted into electricity as is feasible.

Water Control Bulletin Number 2

June 30, 1936

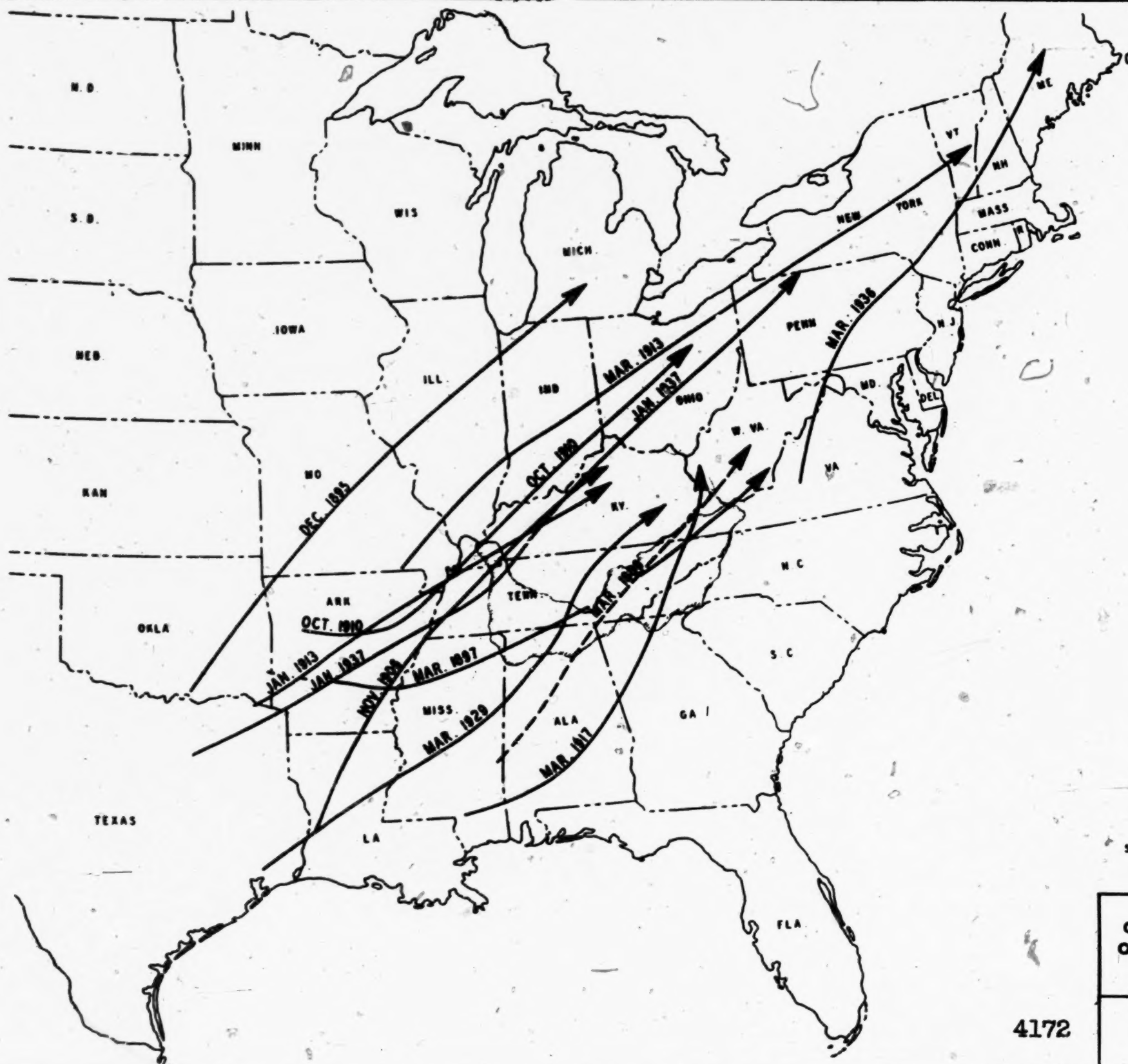
Confirming direction of June 18, 1936, which was responsive to recommendations for increasing navigable depths in the lower river, until further notice water shall be released from Norris Reservoir so as to maintain as nearly as may be a constant flow at Florence, Alabama, of 15,000 c.f.s.

Variations in the daily peak discharges at Wilson Dam should not be so large that minimum flow at the Florence gage will ever be less than 13,000 c.f.s. The regulation of the water level in the Wilson pool should be accomplished by varying the discharge at the Wheeler Dam. The water level above the Wheeler Dam should be varied so as to iron out, as far as possible, any fluctuations in the amount of water flowing into the Wheeler Reservoir.

[fol. 4167] **DEFENDANTS' EXHIBIT No. 66**

Map entitled "Tennessee River Basin, Principal Rivers, Railroads and Highways."

(Original Exhibit)



Scale 50 0 100 200 Miles

**OUTSTANDING STORMS
OCCURRENCE AND PATHS
OF GREAT RAINFALL**

DEFENDANTS' EXHIBIT No. 67

[fol. 4168]

Rainfall and Run-off Data

Stream	Drainage Area Sq. Miles	Average Annual Rainfall Inches	Average Annual Run-Off Inches
Upper Tennessee River Basin:			
French Broad River.....	5,140	50.8	
Holston River.....	3,810	46.0	
Clinch River.....	4,400	49.6	
Little Tennessee River.....	2,650	62.5	
Hiwassee River.....	2,660	56.0	
Minor Tributaries and Local Area.....	2,740	52.0	
Total Above Chattanooga.....	21,400	51.9	24.34
Lower Tennessee River Basin:			
Elk River.....	2,330	53.5	
Duck River.....	3,560	52.5	
Minor Tributaries and Local Area.....	13,310	52.3	
Total Below Chattanooga.....	19,200	52.5	
Total Tennessee River.....	40,600	52.2	22.77
Mississippi River Basin:			
Ohio River including Tennessee River.....	203,900	44.3	18.28
Mississippi River Above Columbus, Ky., excluding arid portion of Missouri River.....	533,218	36.3	13.03

Relation of Tennessee River drainage area to Mississippi River drainage area (excluding arid portion of Missouri River basin)—7.6%.

Relation of Mean Annual run-off from Tennessee River basin to run-off from Mississippi River basin above Columbus, excluding arid portion of Missouri River basin—13.1%.

DEFENDANTS' EXHIBIT No. 68

[fol. 4169]

Contribution of Clinch and Hiwassee Rivers to Tennessee River Floods at Chattanooga

Date	Tennessee River at Chattanooga		Clinch River at Clinton Discharge cu. ft. per sec.	Hiwassee River at Reliance Discharge cu. ft. per sec.
	Discharge cu. ft. per sec.	Stage ft.		
Apr. 3, 1886.....	391,000	52.2	91,000	no record
Mar. 2, 1890.....	294,000	42.6	39,000	no record
Mar. 11, 1891.....	264,000	35.9	34,000	no record
Apr. 5, 1896.....	276,000	40.5	76,800	no record
Feb. 9, 1899.....	261,000	38.6	46,700	no record
Mar. 22, 1899.....	274,000	40.2	24,000	no record
Jan. 2, 1902.....	279,000	40.8	54,000	11,380
Mar. 7, 1917.....	341,000	47.7	60,600	25,300
Feb. 1, 1918.....	289,000	42.7	54,400	14,900
Apr. 5, 1920.....	298,000	43.6	21,000	24,500
Dec. 31, 1932.....	240,000	37.6	20,600	20,100
Mar. 29, 1936.....	235,000	37.1	0*	15,300

* Clinch River flow above Norris Dam was stored in the reservoir throughout the flood period. Serious flood stages in 1937 were also prevented by the operation of Norris Dam.

The flow given for the Clinch and Hiwassee Rivers is the estimated flow from these streams reaching Chattanooga at the time of the crest.

DEFENDANTS' EXHIBIT NO. 69

Contributions of Tributaries to Major Mississippi River Floods

Tributary	Year of flood—Discharge in cu. ft. per sec. and per cent of total							
	1903	1912	1913	1916	1922	1927	1929	1937
Upper Mississippi River at Grafton, Ill.	246,000 15.2%	263,000 13.6%	285,000 13.4%	339,000 21.3%	287,000 18.3%	286,000 16.2%	243,000 17.3%	160,000 7.9%
Missouri River at Herman, Missouri	175,000 10.8%	336,000 17.4%	59,000 3.0%	257,000 16.1%	310,000 19.1%	407,000 23.0%	316,000 22.4%	
Ohio River at Mouth	1,200,000 74.0%	1,178,000 60.9%	1,583,000 80.3%	834,000 52.3%	848,000 52.1%	940,000 53.3%	793,000 56.5%	1,850,000 92.1%
Local Area Below Tributaries	Negligible	157,000 8.1%	64,000 3.3%	165,000 10.3%	171,000 10.5%	132,000 7.5%	54,000 3.8%	Negligible
Mississippi River at Columbus, Ky. (Approx.)	1,621,000 100%	1,934,000 100%	1,971,000 100%	1,595,000 100%	1,628,000 100%	1,765,000 100%	1,406,000 100%	2,010,000 100%

The tributary flows are the approximate flows synchronizing with crest in the Mississippi River.

[fol. 4170]

DEFENDANTS' EXHIBIT No. 70

[fol. 4171]

Contribution of the Tennessee River at the
Crest of the More Recent Mississippi River Floods

Floods	Mississippi River at Cairo	Tennessee River at Gilbertsville (1 day previous)
	Stage	Discharge cu. ft. per sec.
Date of Crest		
March 26, 1897.....	51.7*	475,000
April 6, 1912.....	53.9*	225,000
April 9, 1913.....	62.5*	195,000
February 4, 1916.....	53.2	140,000
March 26, 1922.....	53.6	220,000
April 20, 1927.....	58.5*	225,000
March 19, 1929.....	52.7	205,000
April 16, 1936.....	52.8	330,000
February 4, 1937.....	59.6*	240,000

* Cairo is situated at the junction of the Ohio and Mississippi Rivers, 50 miles below the mouth of the Tennessee River.

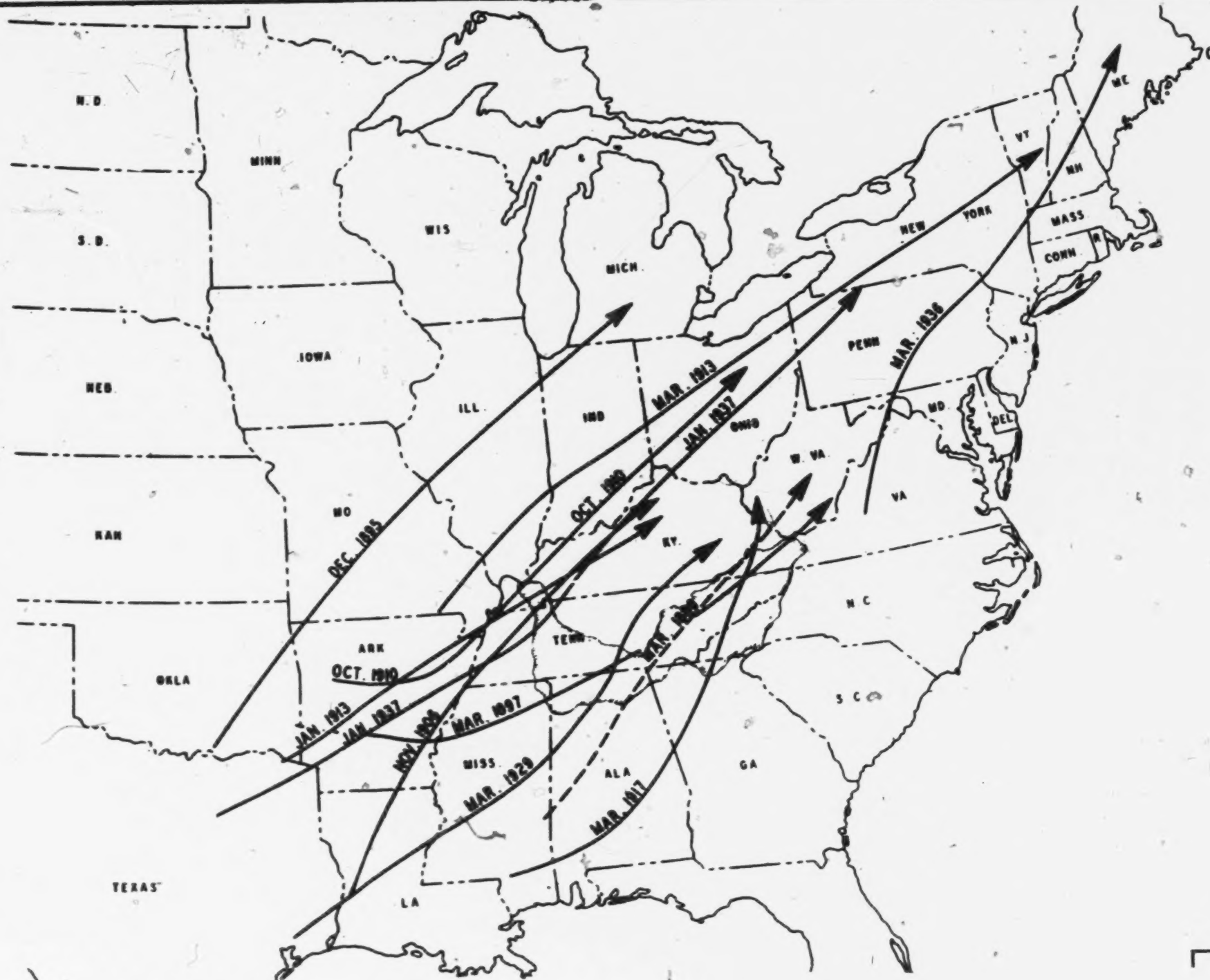
Note: The stages shown for the 1913 and 1927 floods are stages estimated by the Mississippi River Commission for the flood flow as if confined to the channel. The actual stages were lower because of breaks in the levees.

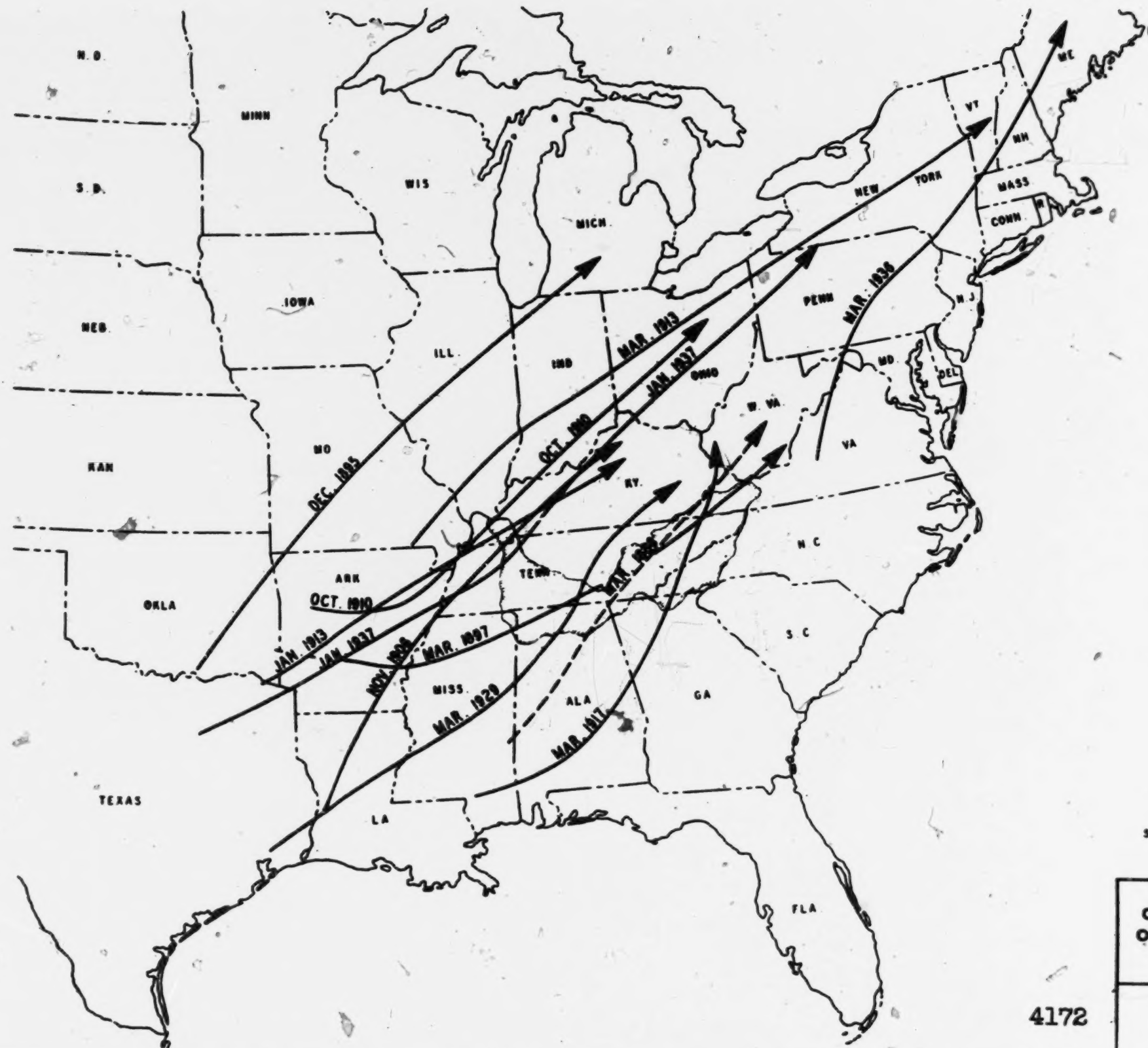
The stages in the 1897 and the 1912 floods would have been higher if the levees had not broken. The 1937 flood stage would have been higher if it had not been for the Birds Point-New Madrid floodway.

(Here follows 1 photolithograph, side folio 4172)



DEFENDANT'S EXHIBIT No. 71
Chart entitled "Outstanding Storms Occurrence and
Paths of Great Rainfall"



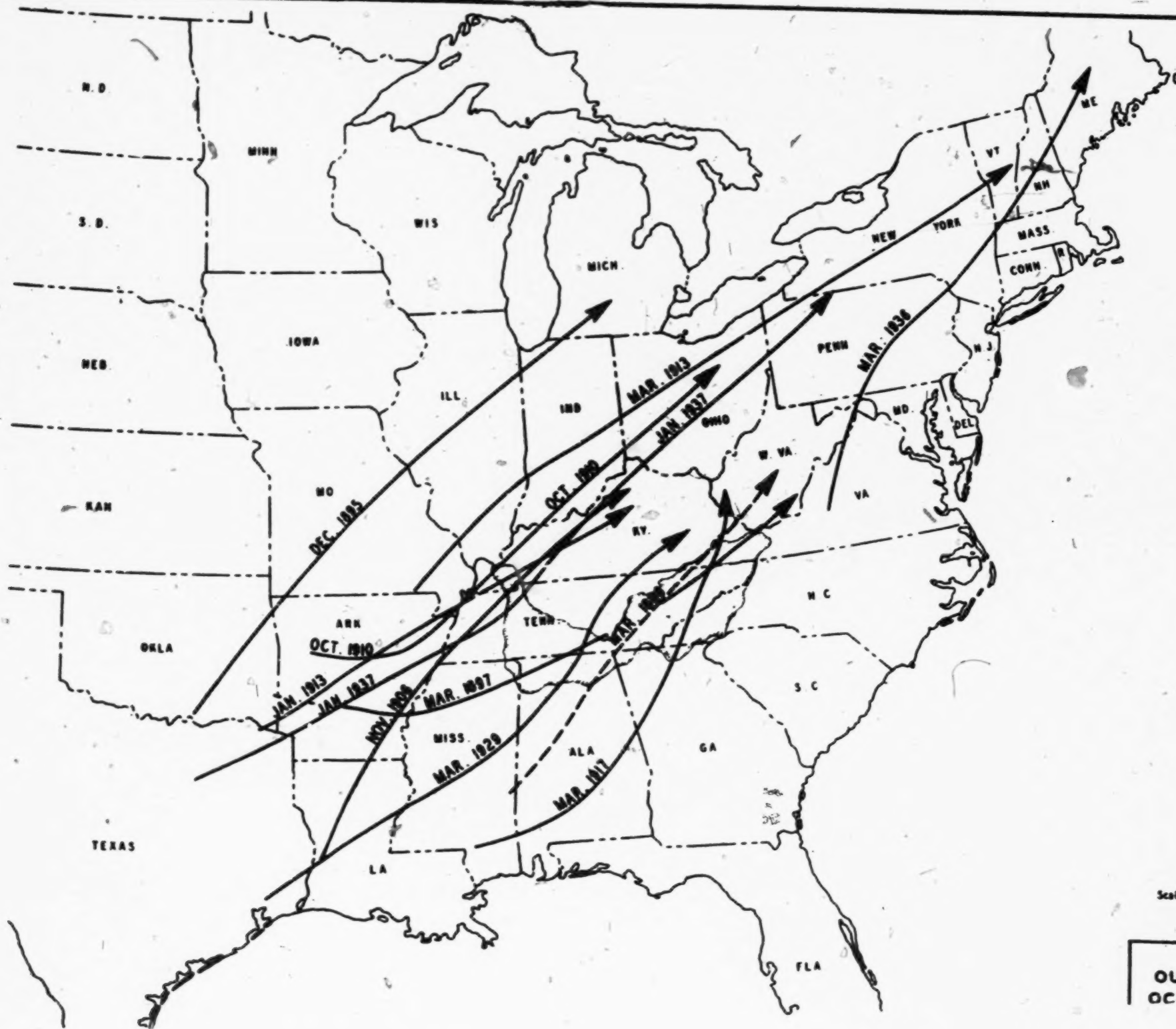


Scale 50 0 100 200

OUTSTANDING STORMS
OCCURRENCE AND PATH
OF GREAT RAINFALL

4172

DEFENDANT'S EXHIBIT No. 71
Chart entitled 'Outstanding Storms Occurrence and
Paths of Great Rainfall'

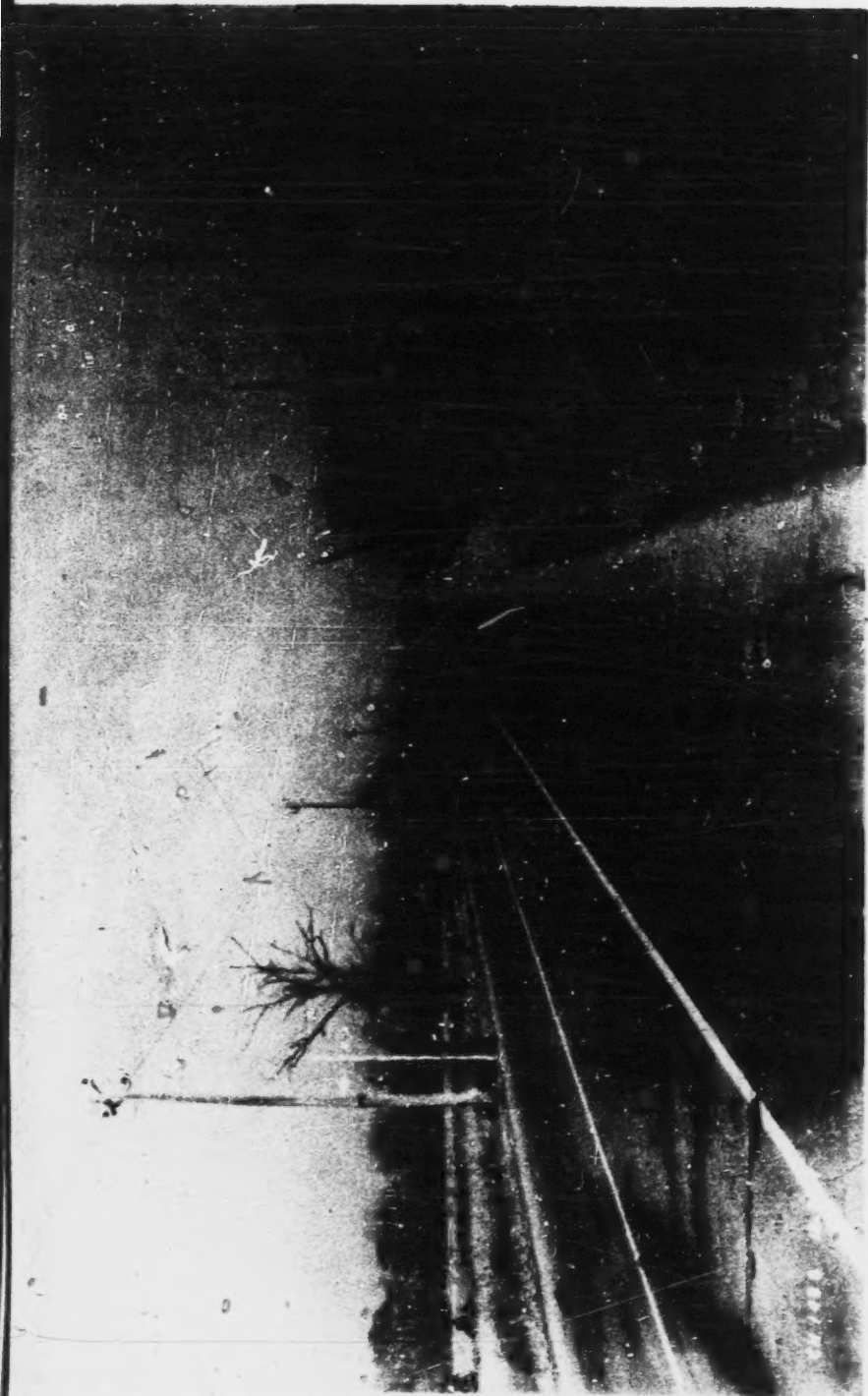


OUTSTANDING STORMS
OCCURRENCE AND PATHS

DEFENDANTS' EXHIBIT No. 76**Photograph.****(Original Exhibit)**

(Here follows Exhibit 76)

4088A





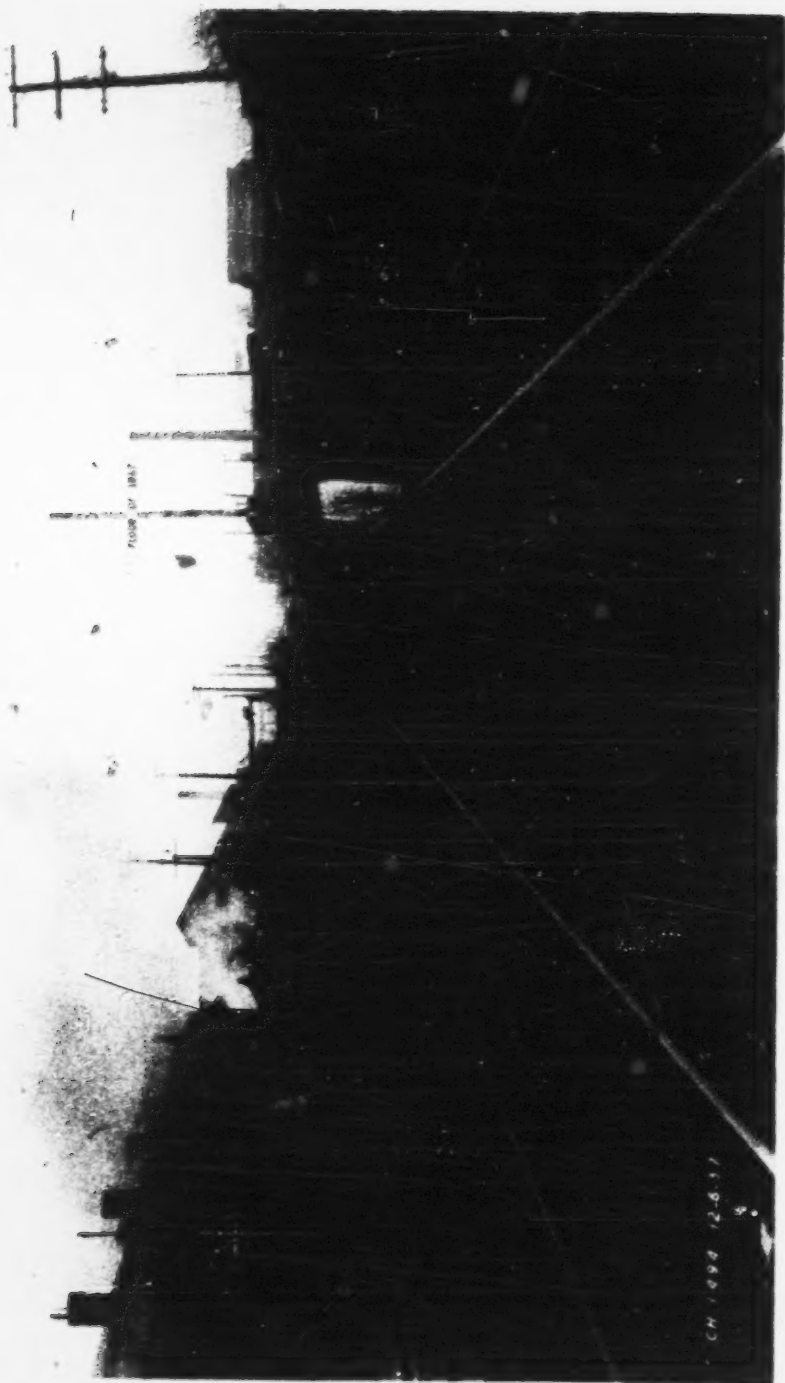
[fol. 4174] DEFENDANTS' EXHIBIT No. 77

Photograph.

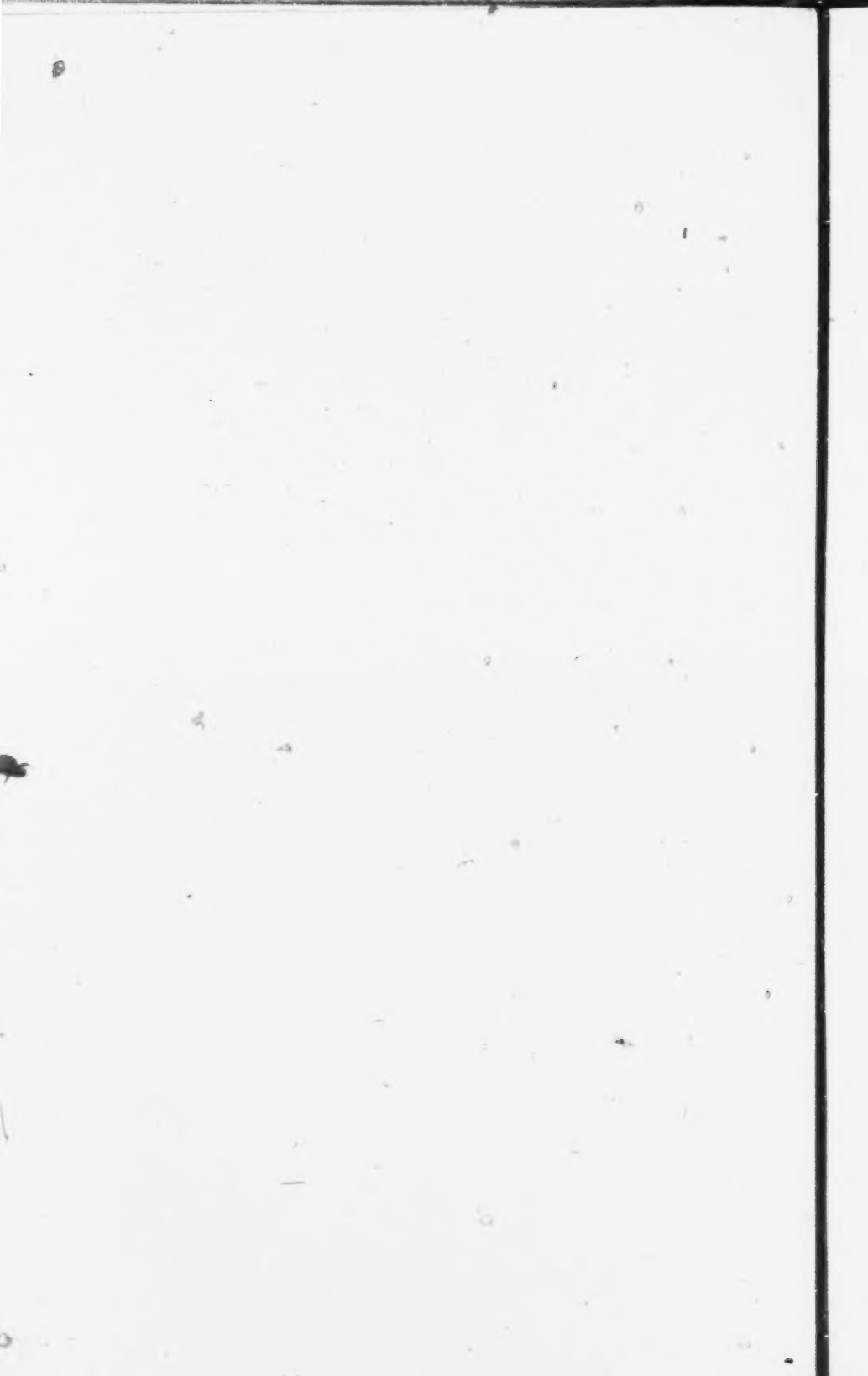
(Original Exhibit)

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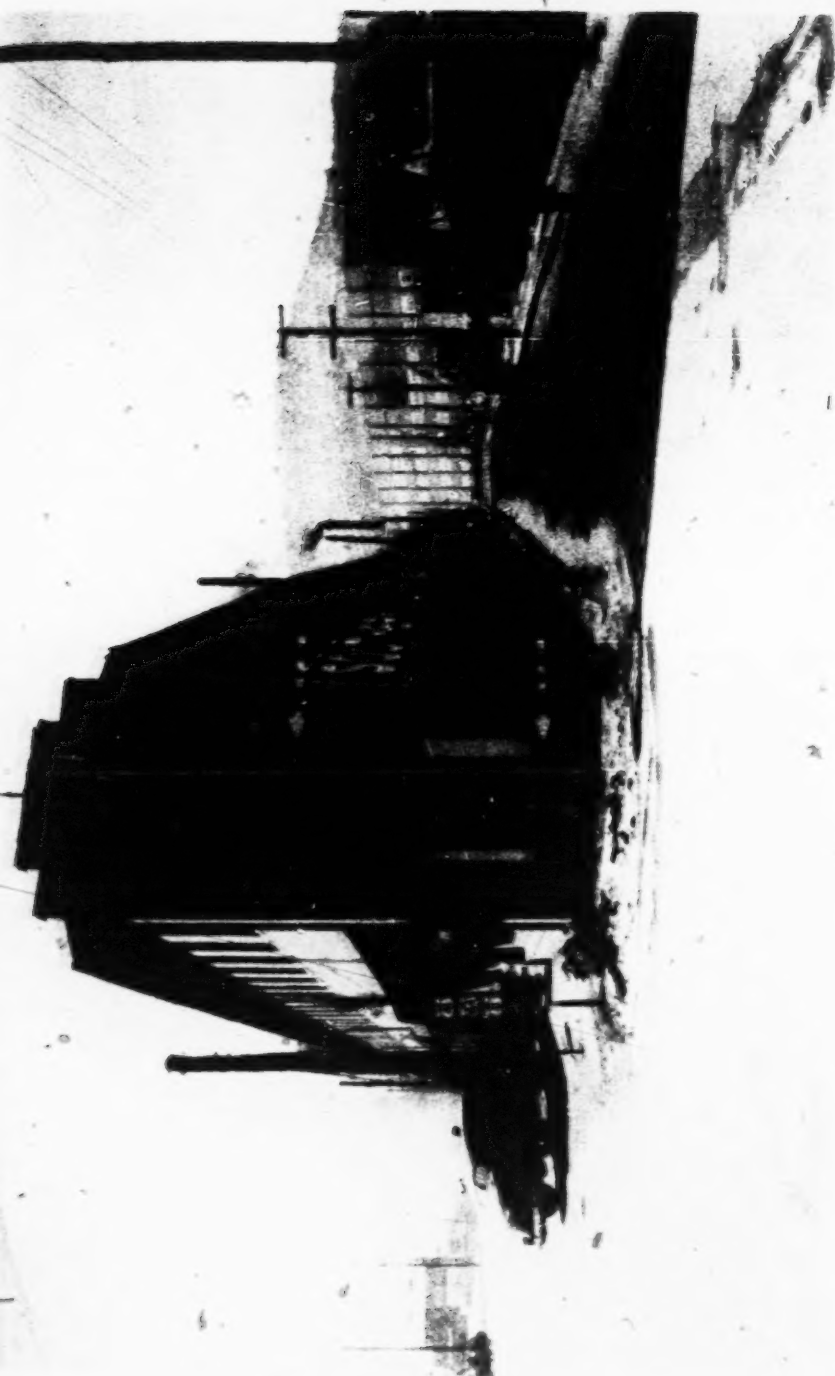
DEFENDANTS' EXHIBIT No. 78

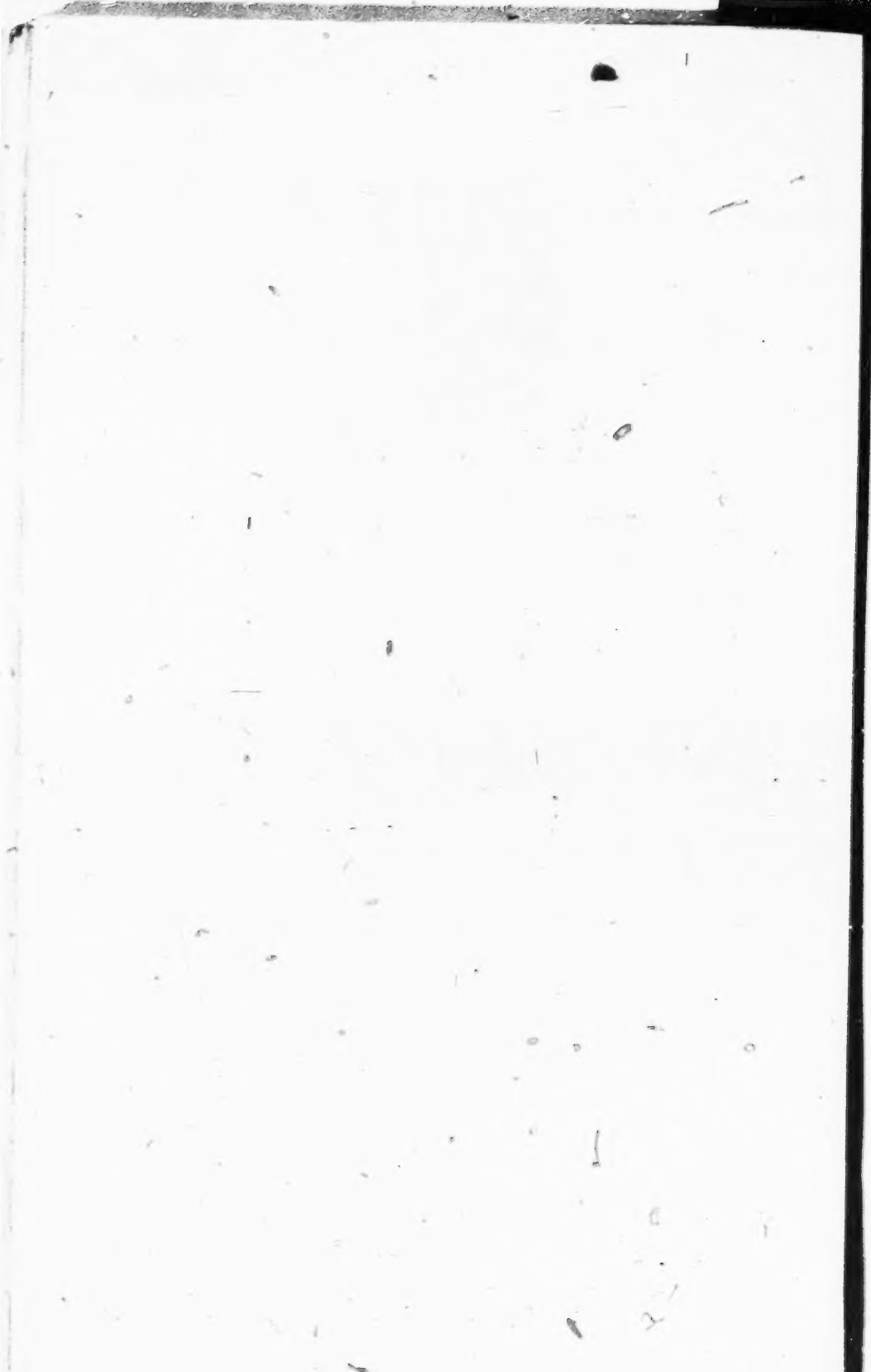
Photograph.

(Original Exhibit)

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DEFENDANTS' EXHIBIT No. 79

Photograph.

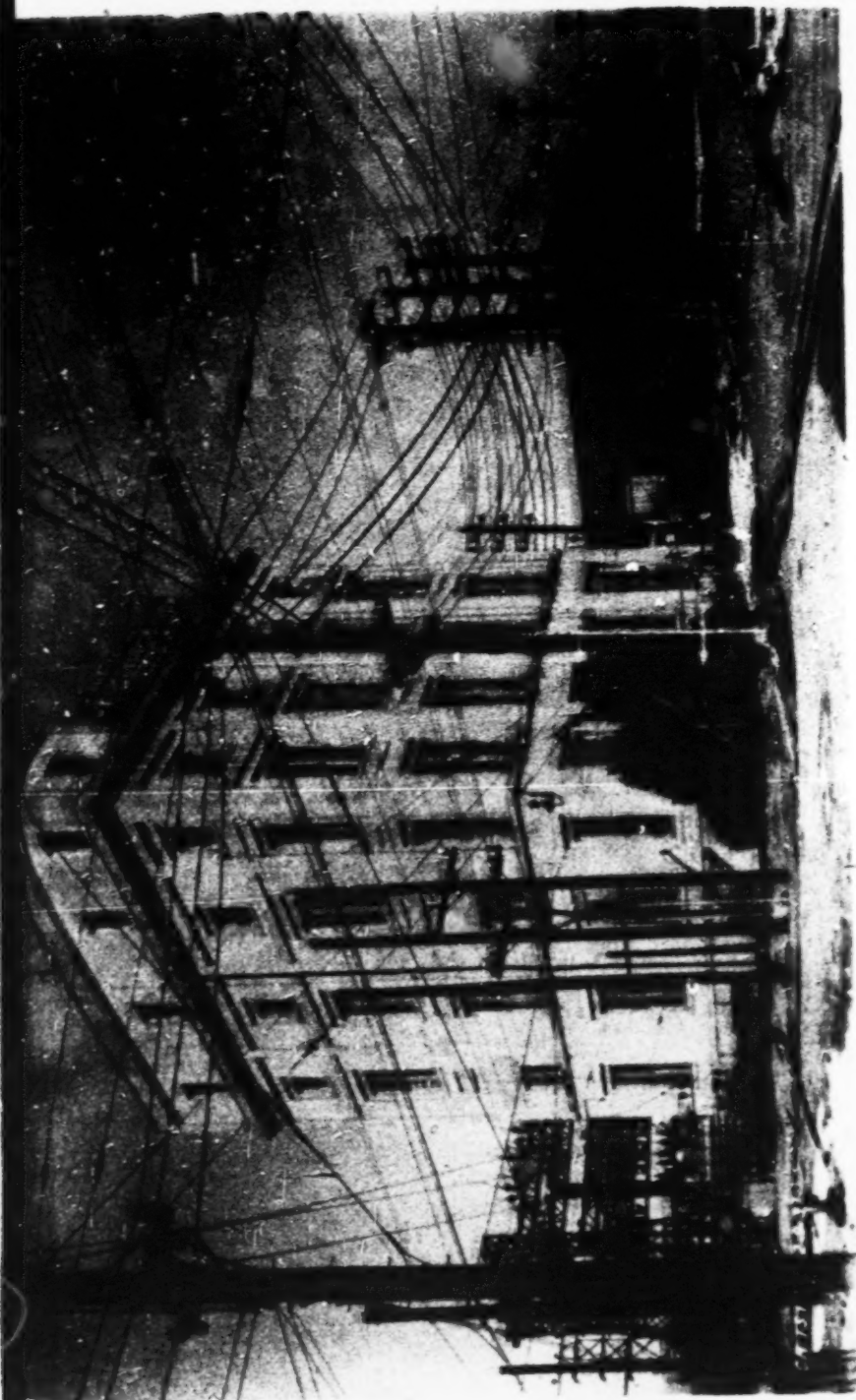
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(Here follows Exhibit 79)

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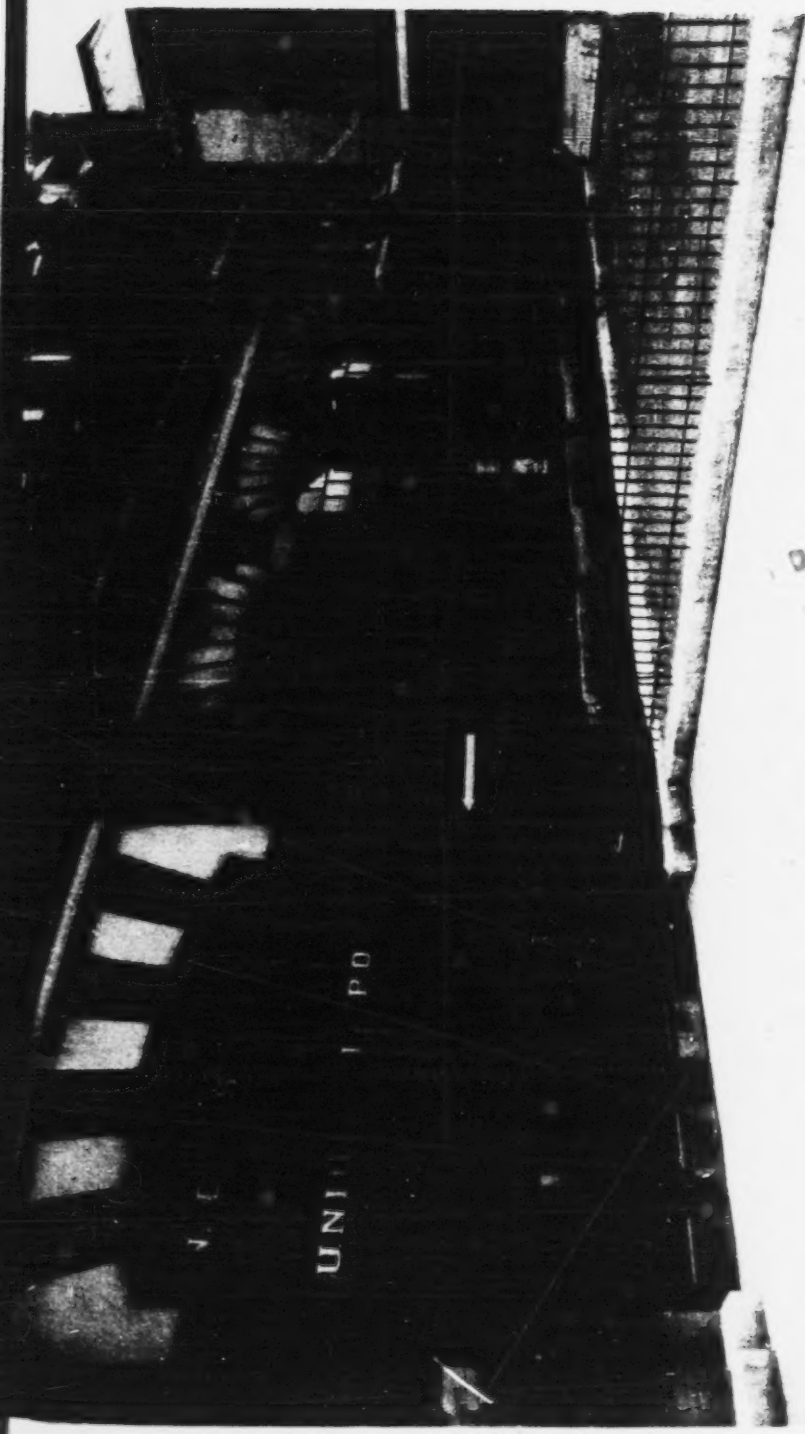


DEFENDANTS' EXHIBIT No. 80

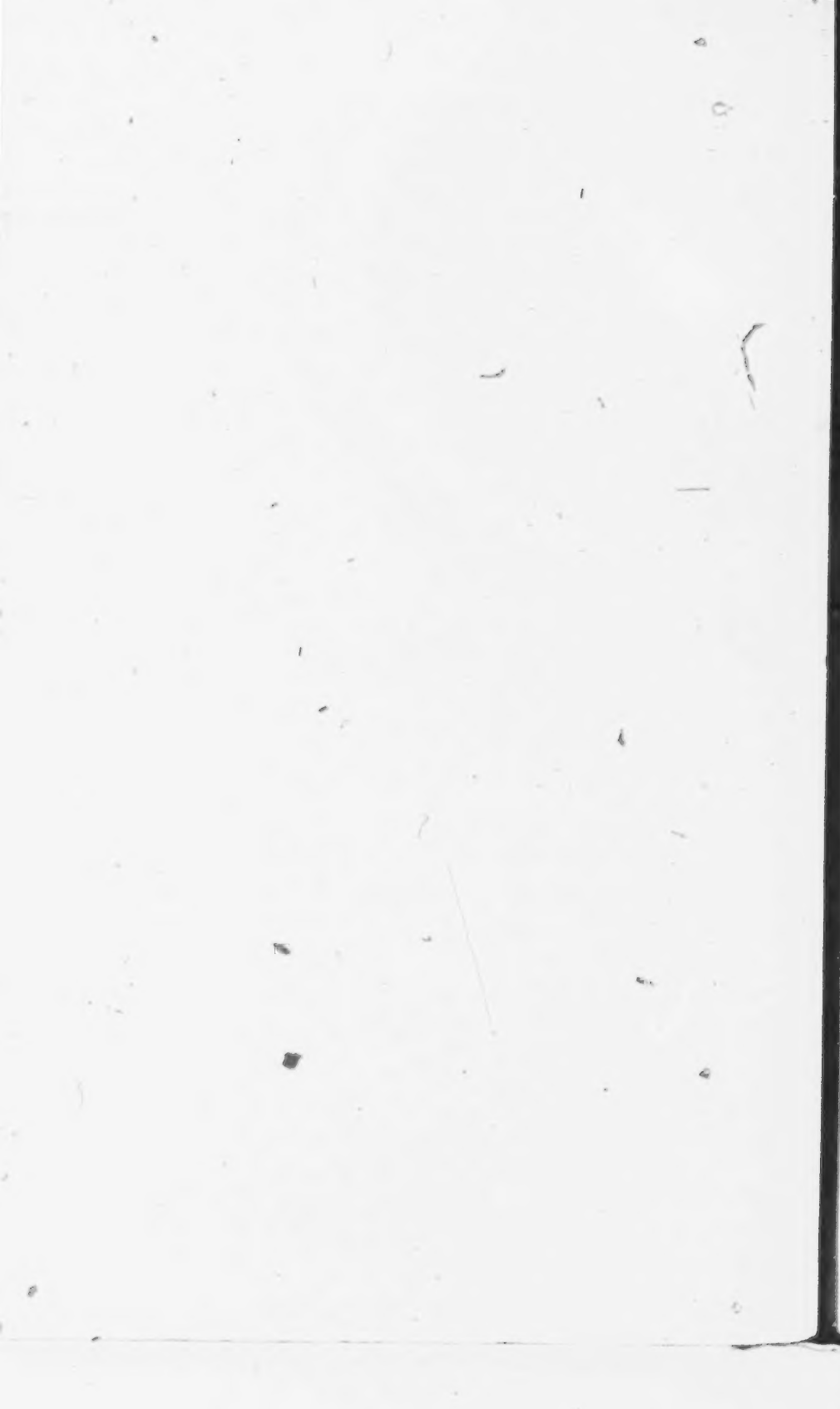
Photograph.

(Original Exhibit)

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DEFENDANTS' EXHIBIT No. 81

Chart entitled "Floods—Chattanooga, Tennessee—Types of Property Affected—Five Foot Intervals of River Stage".

(Original Exhibit)

fol. 4175]

DEFENDANTS' EXHIBIT No. 82

Table Showing Estimates of Reductions in Peak Discharge and Reduction in Flood Crest at Chattanooga for Various Systems of Reservoirs

Peak Discharge			
Year	1926*	1936*	1917*
Natural Discharge.....	252,000	275,000	332,000
Regulated Discharge with:			
Norris, Hiwassee Reservoirs.....	190,000	235,000	265,000
Norris, Hiwassee, Chickamauga Reservoirs....	152,000	176,000	219,000
Norris, Hiwassee, Coulter Shoals, Watts Bar, Chickamauga Reservoirs.....	130,000	157,000	190,000
Note: Discharge is given in cubic feet per second.			
Flood Crest			
Note: Flood stage is 30 feet at Chattanooga.			
Natural Stage.....	38.4 ft.	41.3 ft.	47.7 ft.
Norris, Hiwassee.....	32.0 "	37.1 "	40.3 "
Reduction from Peak.....	6.4 "	4.2 "	7.4 "
Norris, Hiwassee, Chickamauga.....	27.4 "	30.4 "	35.3 "
Reduction from Peak.....	11.0 "	10.9 "	12.4 "
Norris, Hiwassee, Coulter Shoals, Watts Bar, Chickamauga.....	24.6 "	28.0 "	32.0 "
Reduction from Peak.....	13.8 "	13.3 "	15.7 "

* In the years indicated there were substantial floods on the Tennessee River which are assumed as floods for estimating the effect of reservoirs. These floods are the larger floods since 1900, for which data is available. The 1917 flood has not been exceeded at Chattanooga within the past 50 years.

fol. 4176]

DEFENDANTS' EXHIBIT No. 83

Chart entitled "Volume in Peak of Mississippi River—Hydrograph 1929 Flood".

(Original Exhibit)

[fol. 4177] DEFENDANTS' EXHIBIT No. 84

Date of flood peaks at Johnsonville on the Tennessee River, Paducah on the Ohio River, and Cairo on the Mississippi River for past floods exceeding 50 feet at Cairo.

Flood	Tennessee River at Johnsonville		Ohio River at Paducah		Mississippi River at Cairo	
	Date	Peak	Date	Peak	Date	Peak
1882.....	Feb. 2	43.8	Feb. 26	59.95	Feb. 25	51.8
1883.....	Feb. 23	29.0	Feb. 25	50.7	Feb. 27	52.2
1884.....	Feb. 21	43.8*	Feb. 23	54.2	Feb. 22-24	51.8
1886.....	Apr. 15-16	42.1	Apr. 17	50.4	Apr. 19	51.0
1897.....	Mar. 24	48.0	Mar. 24-25	50.9	Mar. 25-26	51.6
1903.....	Mar. 11	33.7	Mar. 15-16	47.6	Mar. 15-17	50.6
1907.....	Jan. 27	14.5	Jan. 28	45.7	Jan. 27	50.3
1912.....	Apr. 6	35.4	Apr. 8-11	49.9	Apr. 6-7	54.0
1913.....	Mar. 29	33.3	Apr. 7	54.3	Apr. 7	54.3
1916.....	Jan. 28	25.0			Feb. 4	53.4
1920.....	Mar. 21-22	28.9	Mar. 28	45.3	Mar. 31	51.4
1922.....	Mar. 15	36.4	Mar. 24	48.85	Mar. 25-27	53.6
1922.....	Apr. 23	20.7	Apr. 26	44.0	Apr. 25	53.5
1927.....	Apr. 17	32.2	Apr. 18	47.2	Apr. 20	56.4
1929.....	Mar. 18	31.9	Mar. 15	45.0	Mar. 20	51.8
1929.....	Mar. 29	36.8	Apr. 3	43.8	Apr. 5	51.1
1933.....	Apr. 3	26.2	Apr. 3	47.3	Apr. 5	51.87
1933.....	May 15	27.1	May 24	43.7	May 21	51.82
1936.....	Apr. 12	31.6	Apr. 15-16	50.9	Apr. 16	52.8
1937.....	Jan. 25	41.0	Feb. 2	60.75	Feb. 4	59.6

* Estimated.

[fol. 4178] DEFENDANTS' EXHIBIT No. 85

Tennessee River Flow at Gilbertsville Dam Site
Flood of January-February 1937

Flow of January-February 1937							
Date 1937	Stage Ohio at Paducah	Inflow	Actual Flow	Differ- ence	Inflow	Actual Flow	Differ- ence
cubic feet per second							
Jan. 16	42.9	253,000	230,000	23,000			
17	43.2	280,000	249,000	31,000			
18	46.7	330,000	240,000	90,000			
19	46.2	363,000	252,000	111,000			
20	47.4	385,000	268,000	117,000			
21	49.9	398,000	279,000	119,000			
22	52.5	411,000	296,000	115,000			
23	54.4	421,000	315,000	106,000			
24	55.9	410,000	333,000	77,000			
25	57.4	396,000	338,000	58,000			
26	58.5	358,000	342,000	16,000			
27	58.9	336,000	330,000	6,000			
28	59.2				290,000	324,000	34,000
29	59.6				261,000	310,000	49,000
30	59.9				236,000	297,000	59,000
31	60.2				218,000	275,000	57,000
Feb. 1	60.5				180,000	260,000	80,000
2	60.6				156,000	245,000	89,000
3	60.55				148,000	240,000	92,000
4	60.4				146,000	235,000	89,000
5	60.1				151,000	232,000	81,000
6	59.7				161,000	230,000	69,000
7	59.2				158,000	225,000	67,000
8	58.6				151,000	214,000	63,000
9	58.0				158,000	203,000	45,000

The quantities in the last column represent the additions to the Ohio River crest from the release of Tennessee River valley storage.

WAB & RLM: GT-12-16-37

[fol. 4179] DEFENDANTS' EXHIBIT No. 86

Chart entitled "Effect of Natural Storage in Gilbertsville Reservoir Area in the Flood of 1937".

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 87

Chart entitled "Elimination of Dead Storage".

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 88 (Excluded)

Chart entitled "Divisions of Ohio River Drainage Basin Within Which Reservoirs Have Been Built Or Considered".

(Omitted)

DEFENDANTS' EXHIBIT No. 89

Chart entitled "Operation of Suggested Detaining Basin System".

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 90

Chart entitled "Comparison Between Norris Reservoir and Cove Creek Reservoir Suggested By Ford Kurtz".

(Original Exhibit)

[fol. 4180] DEFENDANTS' EXHIBIT No. 91

Map entitled "Alluvial Valley of Lower Mississippi River".

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 92

Map entitled "Tennessee River Drainage Basin".

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 93

Chart entitled "Profile of the Tennessee River Unimproved".

(Original Exhibit)

[fol. 4181] DEFENDANTS' EXHIBIT No. 94

Maximum and Minimum Rates of Stream Flow, Tennessee River

	Maximum	Minimum
Knoxville	290,000 c. f. s.	1,390 c. f. s.
Chattanooga	459,000 c. f. s.	3,300 c. f. s.
Florence	470,000 c. f. s.	4,000 c. f. s.
Johnsonville	480,000 c. f. s.	3,500 c. f. s.

[fol. 4182] DEFENDANTS' EXHIBIT No. 95

Chart entitled "Previous Projects Tennessee River Basin."

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 96

Chart entitled "Commerce On Tennessee River."

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 97

Map entitled "Existing And Proposed Channel Depths
Before Tennessee Valley Authority Act."

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 98

Map entitled "TVA Projects."

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 99

Photograph.

(Original Exhibit)

(Here follows Exhibit 99)

4102A





[fol. 4183] DEFENDANTS' EXHIBIT No. 100

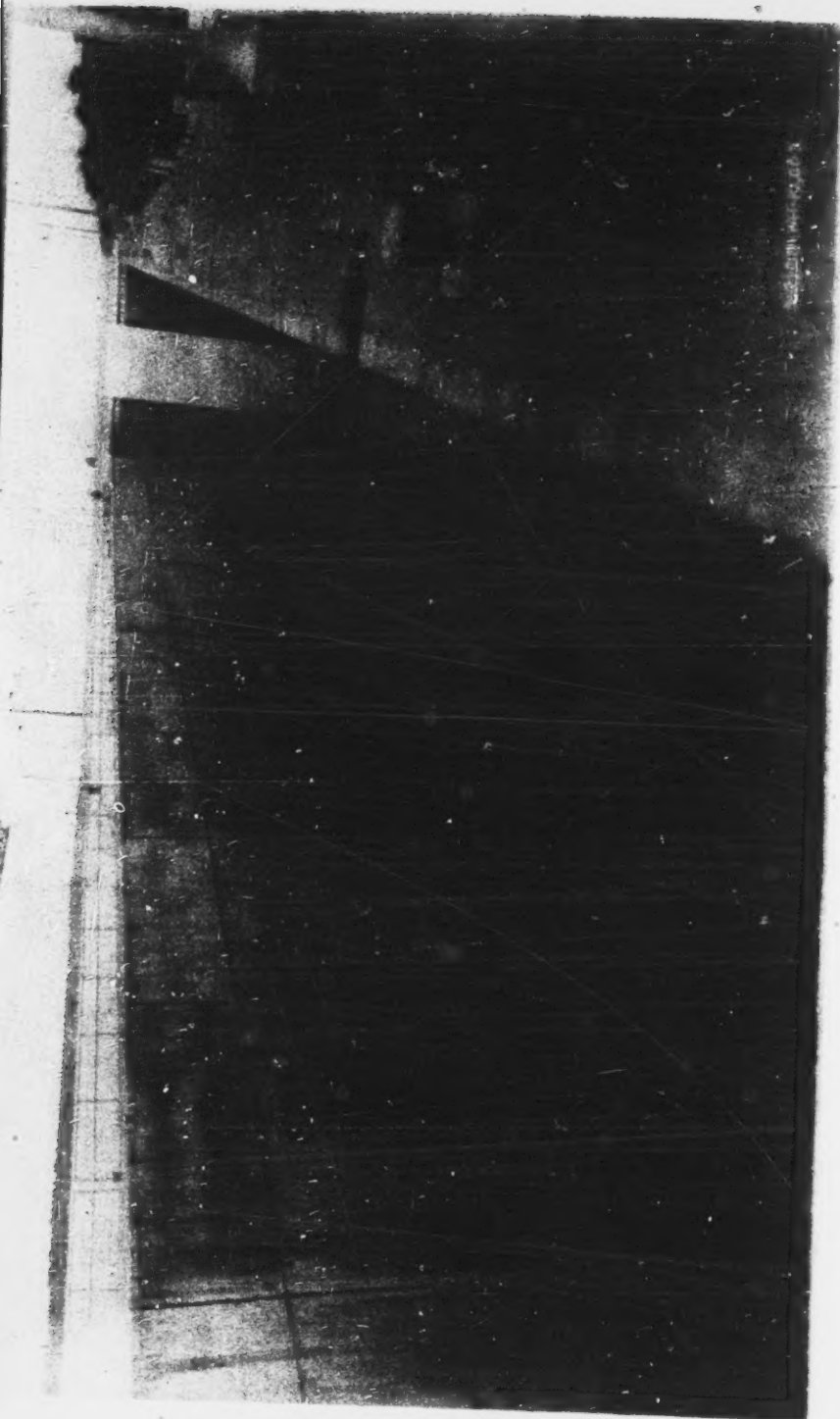
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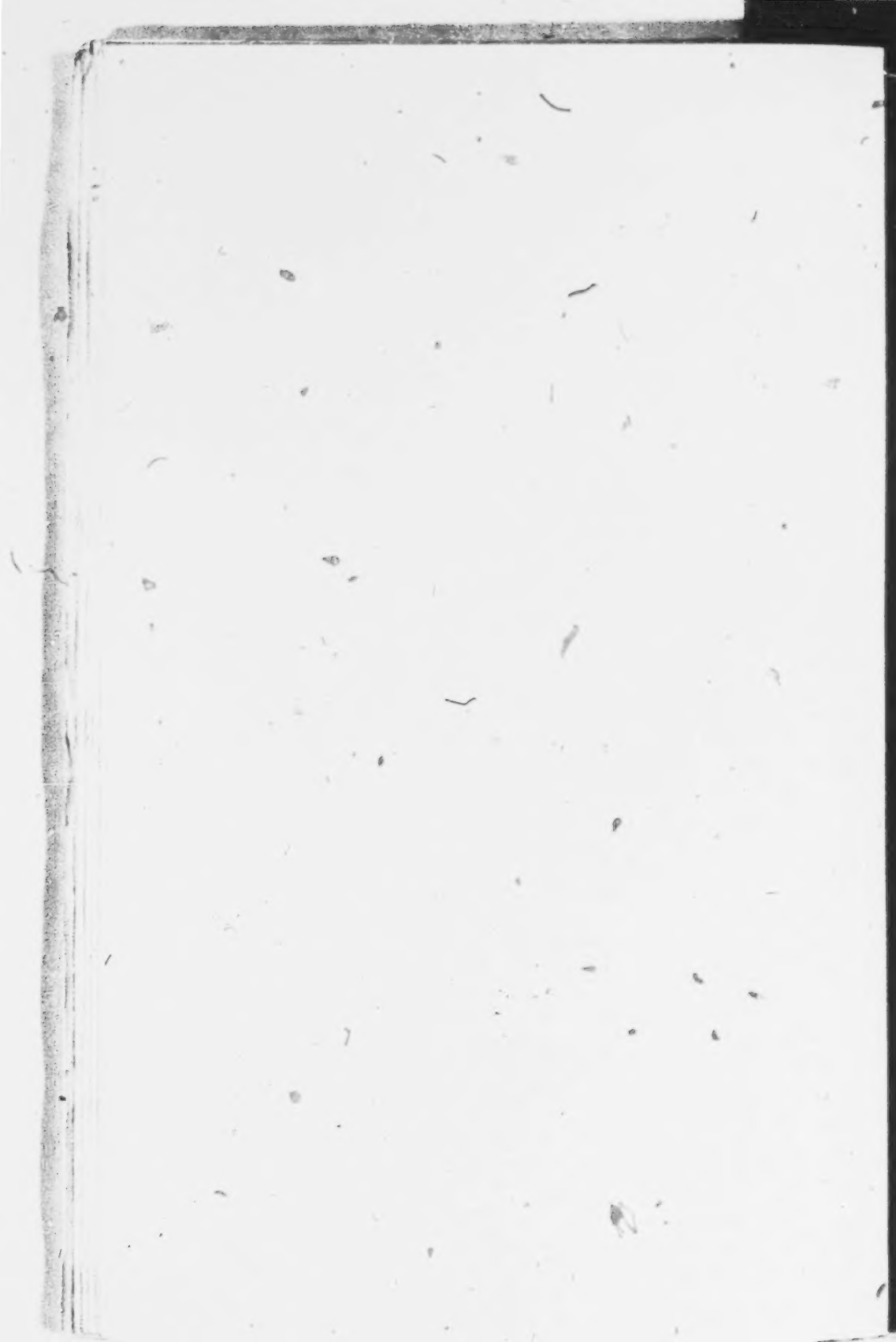
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DEFENDANTS' EXHIBIT No. 101

Photograph.

(Original Exhibit)

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4106A



REPRODUCED FROM

100-5-27-37

7

DEFENDANTS' EXHIBIT No. 102

**Diagram entitled "Coal Transfer and Transit Facilities—
Norris Project."**

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 103

Diagram entitled "Coal Transfer and Transit Facilities—Section and Elevation Through Transit Bin and Non-Over-flow Section—Norris Project."

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 104

Chart entitled "Comparison of High Dam and Low Dam Plans on Tennessee River."

(Original Exhibit)

[fol. 4184] DEFENDANTS' EXHIBIT No. 105

Time Saved in Lockages with TVA High-Dam Plan as Compared to a Low-Dam Plan, Assuming Same Size of Locks in Each Plan

Paducah, Ky., to Knoxville, Tenn., single lockages

Section of River	Time Consumed in Lockages		Saving due to Plan (Hours)
	Low Dam Plan (Hours)	High Dam Plan (Hours)	
Paducah, Ky. to Florence, Ala.....	3.62	1.30	2.32
Florence, Ala. to Chattanooga, Tenn.....	6.35	3.52	2.83
Chattanooga, Tenn. to Knoxville, Tenn.....	8.78	1.95	6.83
Total, Paducah, Ky. to Knoxville, Tenn.....	18.75	6.77	11.98

Paducah, Ky., to Knoxville, Tenn., single lockages below Florence, Ala., and double lockages above Florence, Ala.

Section of	Time Consumed in Lockages		Saving due to Plan (Hours)
	Low Dam Plan (Hours)	High Dam Plan (Hours)	
Paducah, Ky. to Florence, Ala.....	3.62	1.30	2.32
Florence, Ala. to Chattanooga, Tenn.....	13.12	7.42	5.70
Chattanooga, Tenn. to Knoxville, Tenn.....	18.42	4.45	13.97
Total, Paducah, Ky. to Knoxville, Tenn.....	35.16	13.17	21.99

[fol. 4185] DEFENDANTS' EXHIBIT No. 106

Graph entitled "Comparison of Velocities in High Dam and Low Dam Pools."

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 107

Graph showing relation between horsepower and depth.

(Original Exhibit)

[fol. 4186] DEFENDANTS' EXHIBIT No. 108

Percentages of Channel Distances That Are Less Than
20 Feet in Depth in the High-Dam Pools

Pool	Length of pool (Miles)	Length of pool less than 20 feet in depth (miles)	Per Cent of pool length less than 20 feet in depth
No. 52	22.5	4.0	18
Gilbertsville	184.2	4.4	2
Pickwick	50.1	2.1	4
No. 1	2.5	2.5	100
Wilson	15.6	1.1	7
Wheeler	74.1	4.7	6
Guntersville	82.1	14.4	18
Hales Bar	39.9	9.3	23
Chickamauga	58.9	3.5	6
Watts Bar	73.4	2.4	3
Coulter Shoals	48.8	2.3	5

[fol. 4187] DEFENDANTS' EXHIBIT No. 109

Map entitled "Improvement on Tributaries Provided By
High Dam Plan".

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 110

Chart entitled "Comparison of Pool Fluctuations With
High Dams and Low Dams".

(Original Exhibit)

September 1, 1934.

District Engineer, U. S. Engineer Office, Nashville, Tennessee

DEAR SIR:

We would like to have the best information you are able to give us as to the number, size and arrangement of locks which will probably be required by the War Department for the middle and upper sections of the Tennessee River. At some of the damsites the space for structures is quite limited, and we are naturally anxious to plan for a lock layout which will ultimately require as little space as possible.

In this connection the following questions arise:

1. If one 360' x 60' lock is constructed initially, will the requirement be made that space be left for an additional 600' x 110' lock?

2. If one 600' x 110' lock is constructed initially, will the requirement be made that space be provided for the construction of an additional 360' x 60' lock, if and when required?

It is our thought that if by constructing the large lock initially we could avoid providing space for the additional smaller lock in the future, the construction cost would not be greatly increased, and at the same time we could obtain a much better arrangement of structures, as the space for the second lock, which would otherwise have to be bulk-headed, could be used permanently for spillway.

Of course, if the requirement is that only the smaller lock need be built initially, with no provision for an additional lock, the cost and space requirements would be even less, but we do not know whether this would meet what you consider the minimum provisions for navigation.

We would appreciate an answer to these questions as early as possible.

Thanking you, we are

Yours very truly, Jas. S. Bowman, Hydraulic Engineer.

JSB:mh.

[fol. 4189] DEFENDANTS' EXHIBIT No. 112

War Department,

Office of the Chief of Engineers, Washington

September 19, 1934.

Dr. Arthur Ernest Morgan, Chairman, Tennessee Valley
Authority, Knoxville, Tennessee.

DEAR DR. MORGAN:

I am in receipt, by reference, of a letter from Mr. James S. Bowman, Hydraulic Engineer, Tennessee Valley Authority, to the District Engineer at Nashville, Tenn., dated September 1, 1934, asking as to the number, size and arrangement of locks required in the interests of navigation on the middle and upper sections of the Tennessee River, and pointing out the desire of the Authority to avoid leaving space for a second lock to be constructed at a later date.

The Tennessee River, for convenience in supervising navigation projects, has been divided into three parts, the Upper Tennessee, extending from the head of navigation to Chattanooga; the Middle Tennessee, extending from Chattanooga to Riverton; and the Lower Tennessee, extending from Riverton to the Mouth. The Department, after careful consideration, has adopted the following requirements for these sections, which are the minimum provisions necessary to meet the needs of navigation:

Upper Tennessee River:

The locks, 60 feet by 360 feet, to be constructed at the time the dams are constructed, with space enough for the construction of locks 110 feet by 600 feet.

Middle Tennessee River:

The locks, 60 feet by 360 feet, to be constructed at the time the dams are constructed with space enough for the construction of locks 110 feet by 600 feet.

Lower Tennessee River:

The locks, 110 feet by 600 feet, to be constructed at the time the dams are constructed with space left for the future construction of locks 60 feet by 360 feet.

DEFENDANTS' EXHIBIT No. 112

[fol. 4190] The provision of an auxiliary lock at a future date is essential to provide the means of maintaining uninterrupted navigation in case of accident to one lock and during periods when it will be necessary to have one lock out of commission for repair or overhaul. It is probably not necessary in every case to incur large initial expense in providing for the future locks but the arrangements should not preclude their eventual installation. The District and Division Engineers will be glad to give their assistance in planning the most desirable layout at each site to provide for both the immediate and the prospective needs.

Very truly yours, (Signed) E. M. Markham, Major
General, Chief of Engineers.

[fol. 4191] DEFENDANTS' EXHIBIT No. 113

Map entitled "Wheeler Reservoir and Surrounding Region".

(Original Exhibit)

(Here follows Exhibit 113)

[fol. 4192]

DEFENDANTS' EXHIBIT No. 114

War Department,
United States Engineer Office,
Nashville, Tennessee

December 7, 1936.

No. 32

Notice to Navigation Interests, Tennessee River

1. The attached drawings show the normal limits of General Joe Wheeler Pool, Tennessee River, and the location of the channel which has been marked for navigation throughout this pool.

2. Notice is hereby given that the following aids to navigation have recently been installed in the above pool:

Lock A No. 286.2.—A red or nun buoy marking left side of navigation channel.

Lower Melton Bluff No. 286.7.—A black or can buoy marking right side of navigation channel.

Upper Melton Bluff No. 287.2.—A black or can buoy marking right side of navigation channel.

Lower Browns Island No. 289.4.—A red or nun buoy marking left side of navigation channel.

Lower Willard Chute No. 290.4.—A red or nun buoy marking left side of navigation channel.

Upper Willard Chute No. 291.9.—A red or nun buoy marking left side of navigation channel.

Head Browns Island No. 292.7.—A black or can buoy marking right side of navigation channel.

Head Browns Island No. 293.2.—A red or nun buoy marking left side of navigation channel.

Lower Browns Ferry No. 294.1.—A black or can buoy marking right side of navigation channel.

Upper Browns Ferry No. 294.7.—A black or can buoy marking right side of navigation channel.

Beaverdam Slough No. 295.3.—A black or can buoy marking right side of navigation channel.

Opposite Fox Branch No. 296.6.—A black or can buoy marking right side of navigation channel.

Beaverdam Slough Light No. 297.2.—A light on pile cluster on right side of navigation channel, which shows one

DEFENDANTS' EXHIBIT No. 114

white flash every two seconds, and double 6' x 6' diamond boards.

Foot Byrd Island No. 298.0.—A red or nun buoy marking left side of navigation channel.

Foot Byrd Island No. 298.2.—A black or can buoy marking right side of navigation channel.

[fol. 4193] Byrds Island No. 299.7.—A black or can buoy marking right side of navigation channel.

Head Byrds Island No. 300.1 (Nun).—A red or nun buoy marking left side of navigation channel.

Head Byrds Island No. 300.1 (Can).—A black or can buoy marking right side of navigation channel.

Heintz Bar No. 300.8.—A red or nun buoy marking left side of navigation channel.

Heintz Bar Light No. 301.4.—A light on pile cluster on right side of navigation channel which shows one white flash every two seconds, and double 6' x 6' diamond boards.

Heintz Bar No. 302.1.—A black or can buoy marking right side of navigation channel.

Lower Decatur No. 303.4 (Can).—A black or can buoy marking right side of navigation channel.

Lower Decatur No. 303.4 (Nun).—A red or nun buoy marking left side of navigation channel.

Flint River Towhead No. 339.1.—A horizontally striped red and black nun obstruction buoy marking Flint River Towhead which is submerged.

3. The normal level of General Joe Wheeler Pool will be Elevation 555.0 which is equivalent to a reading of 21.0 on the upper gage at Wheeler Lock, or 20.9 on the U. S. Weather Bureau gage at Keller Bridge, Decatur.

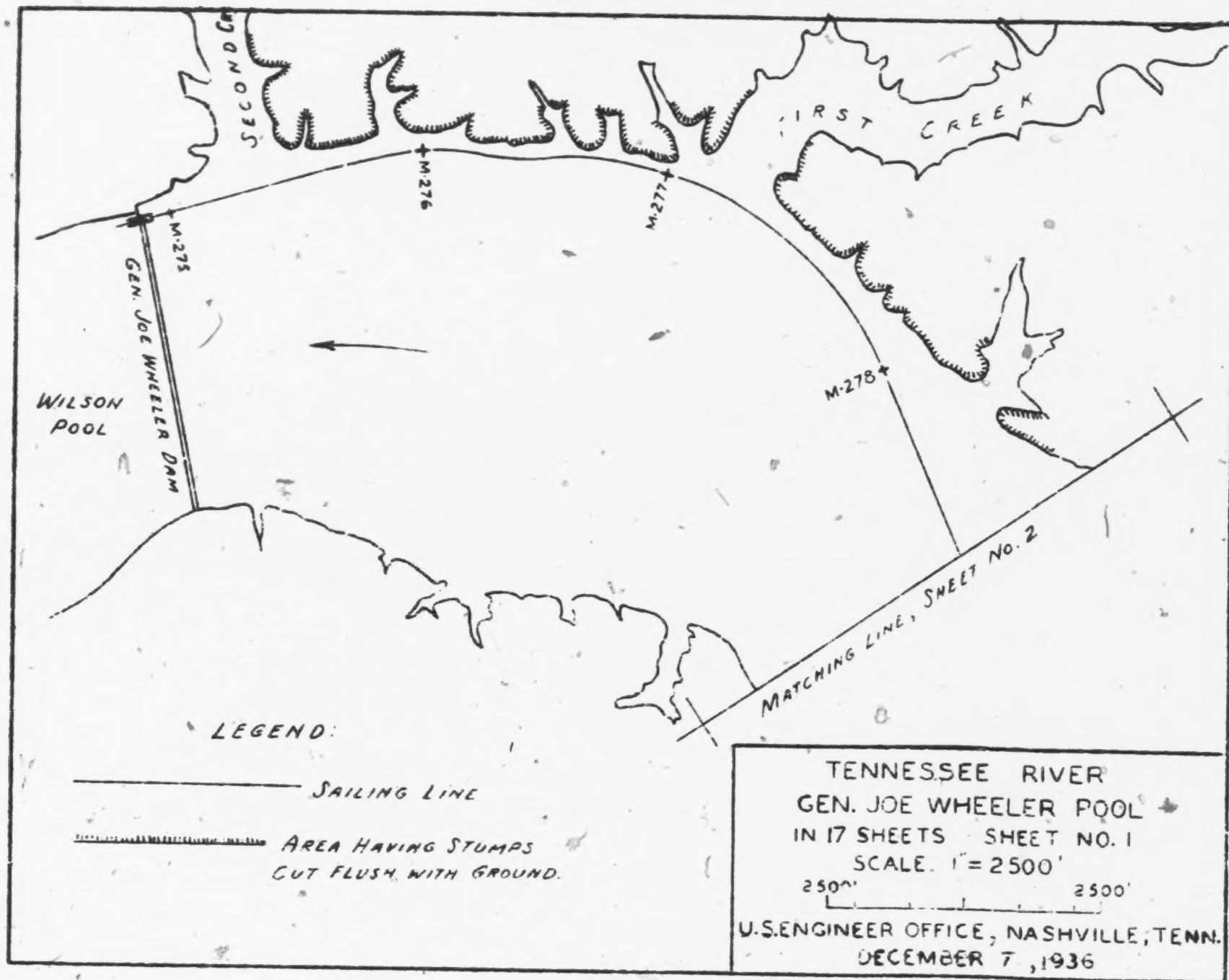
4. Numbers of aids in the above list are miles above the mouth of the river.

5. Navigators are warned to clear all buoys by at least 50 feet.

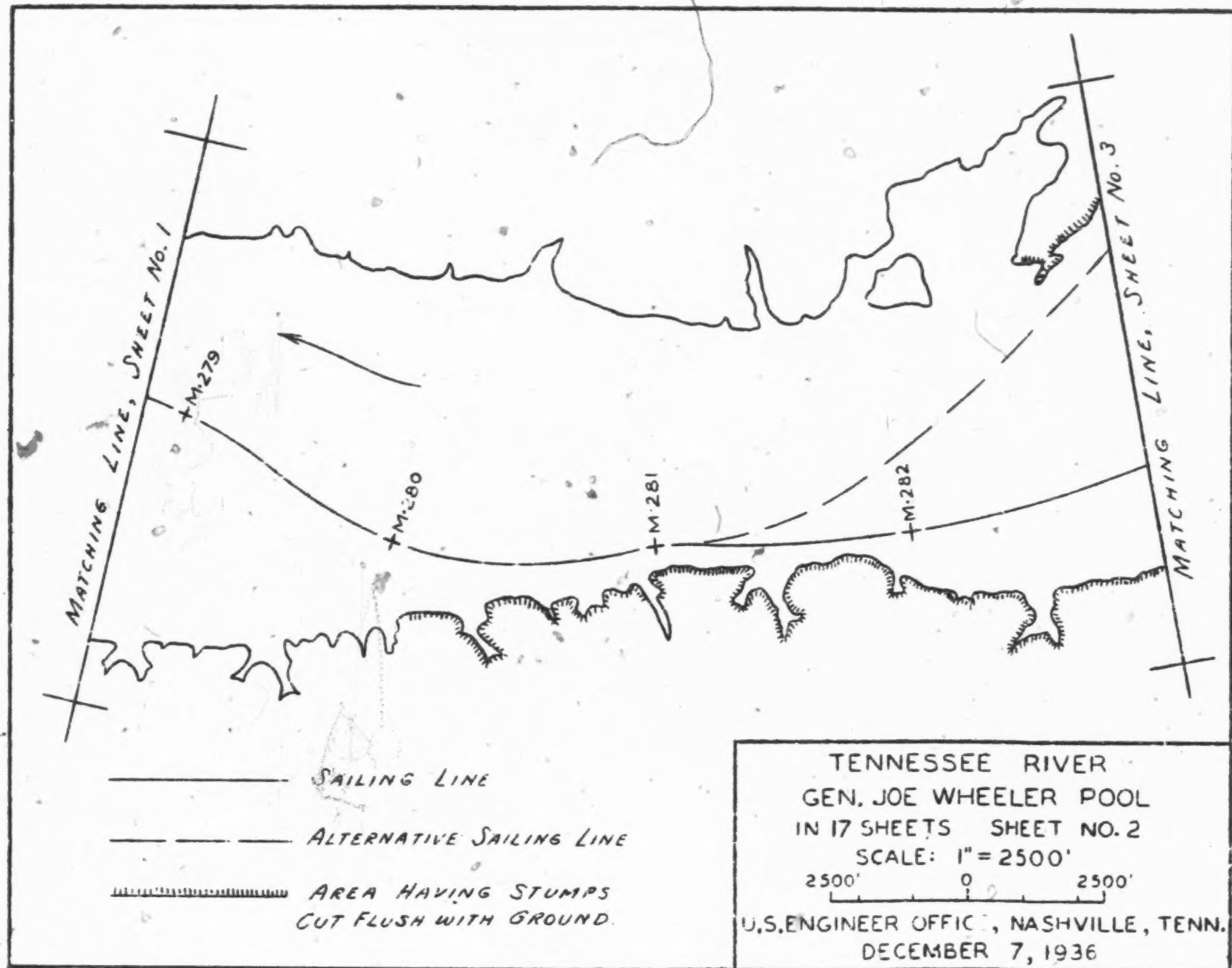
6. Additional copies of this list may be obtained from the U. S. Engineer Office, P. O. Box 1070, Nashville, Tennessee, upon application.

C. E. Perry, Lieut. Col., Corps of Engineers, District Engineer.

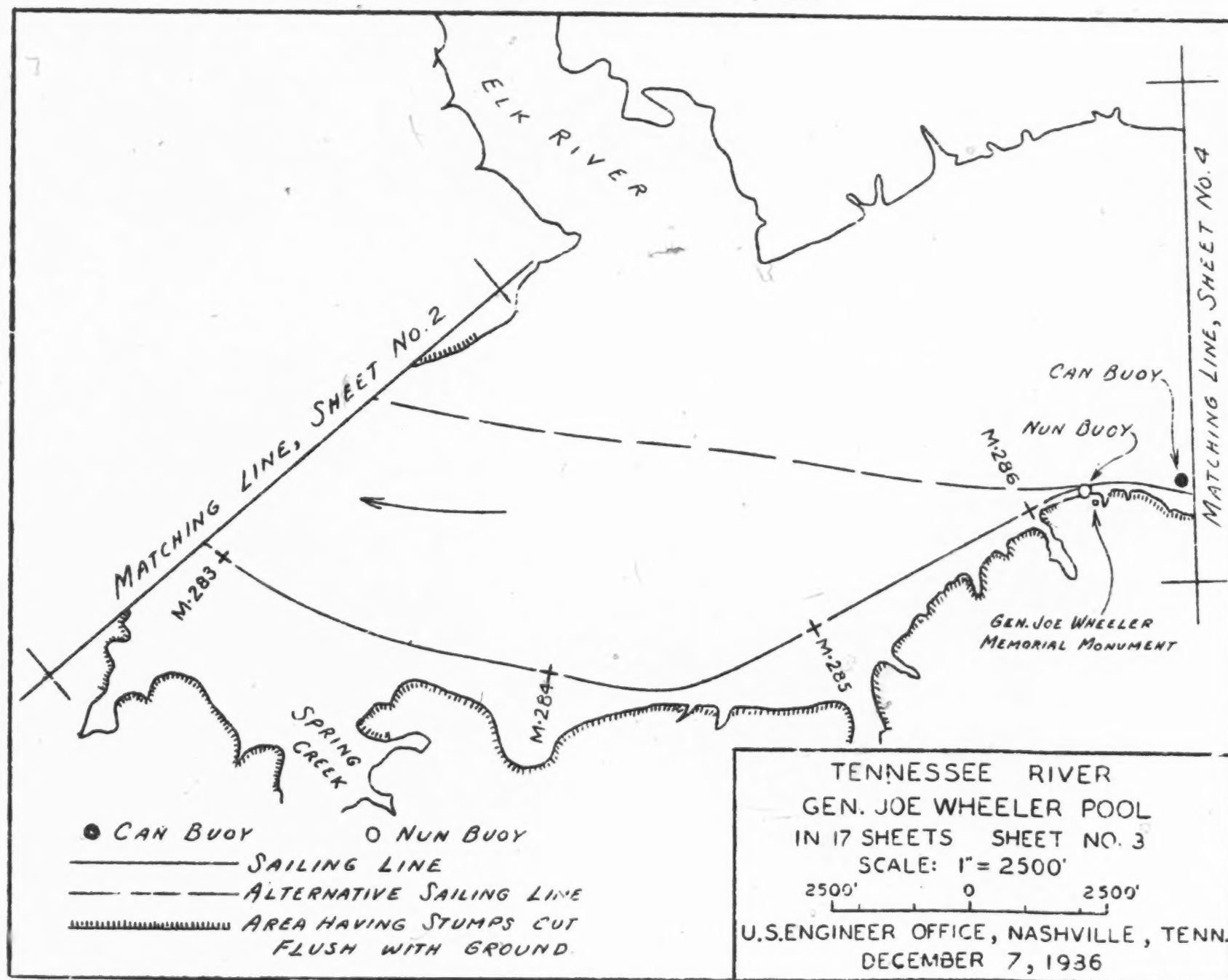
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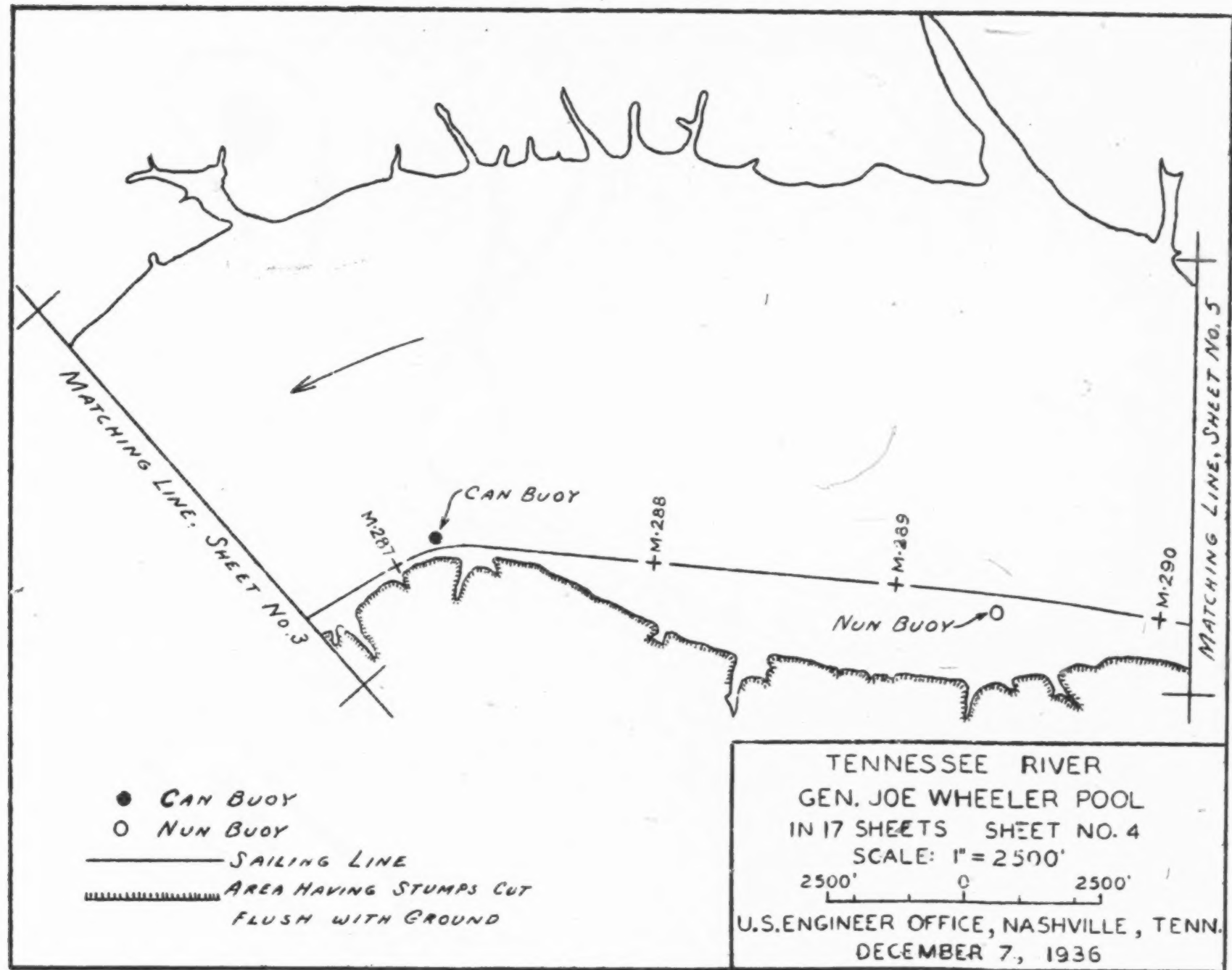
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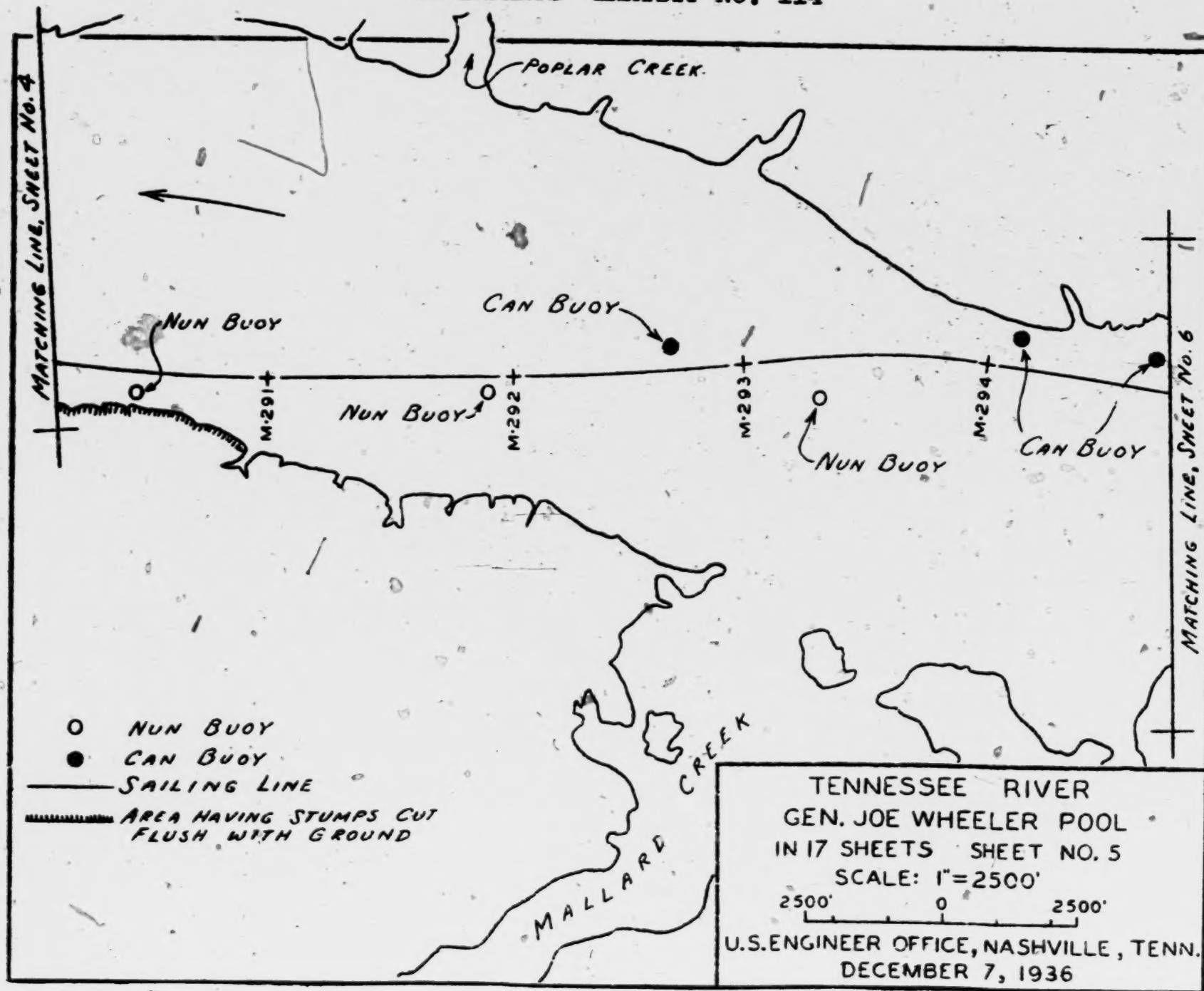


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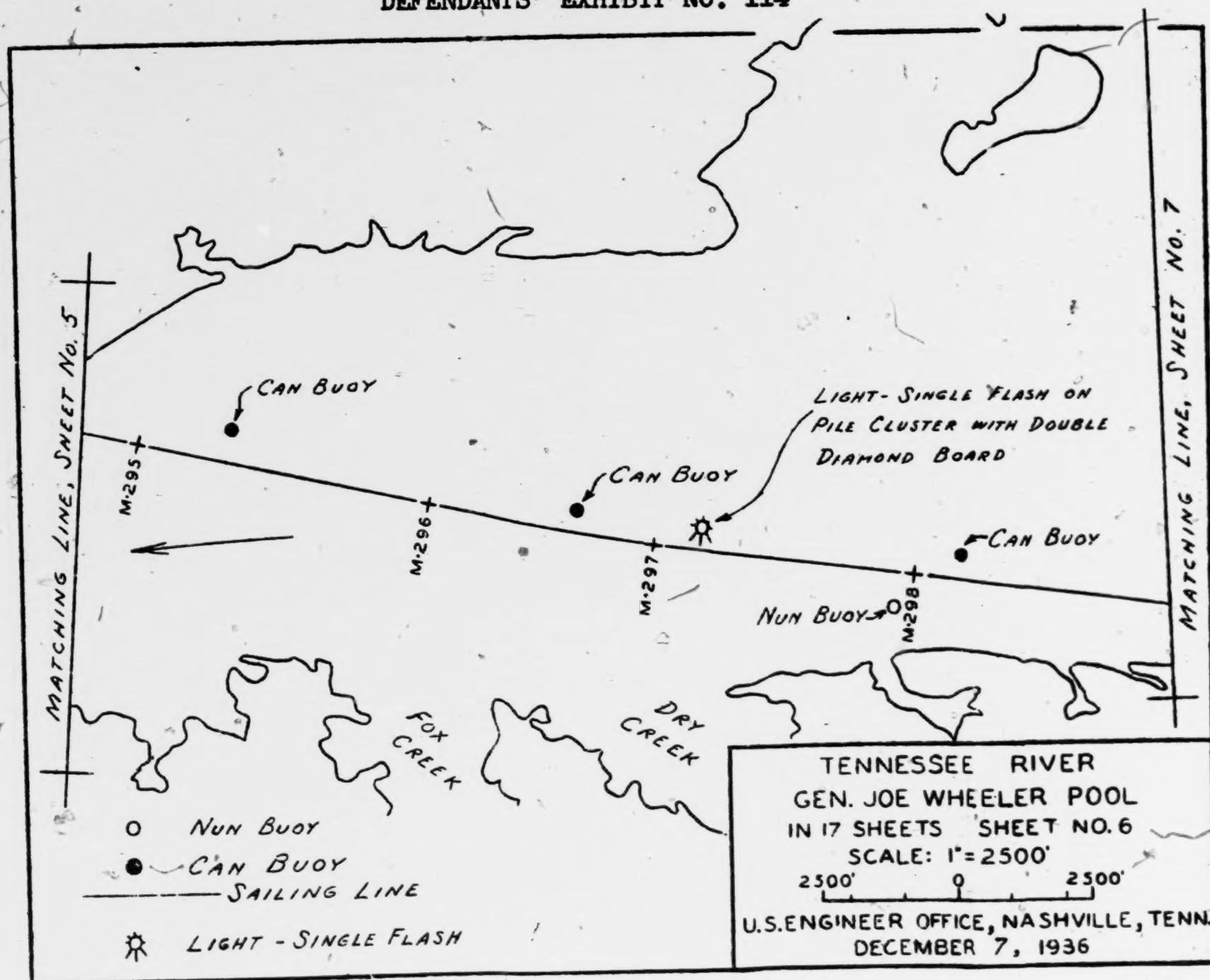


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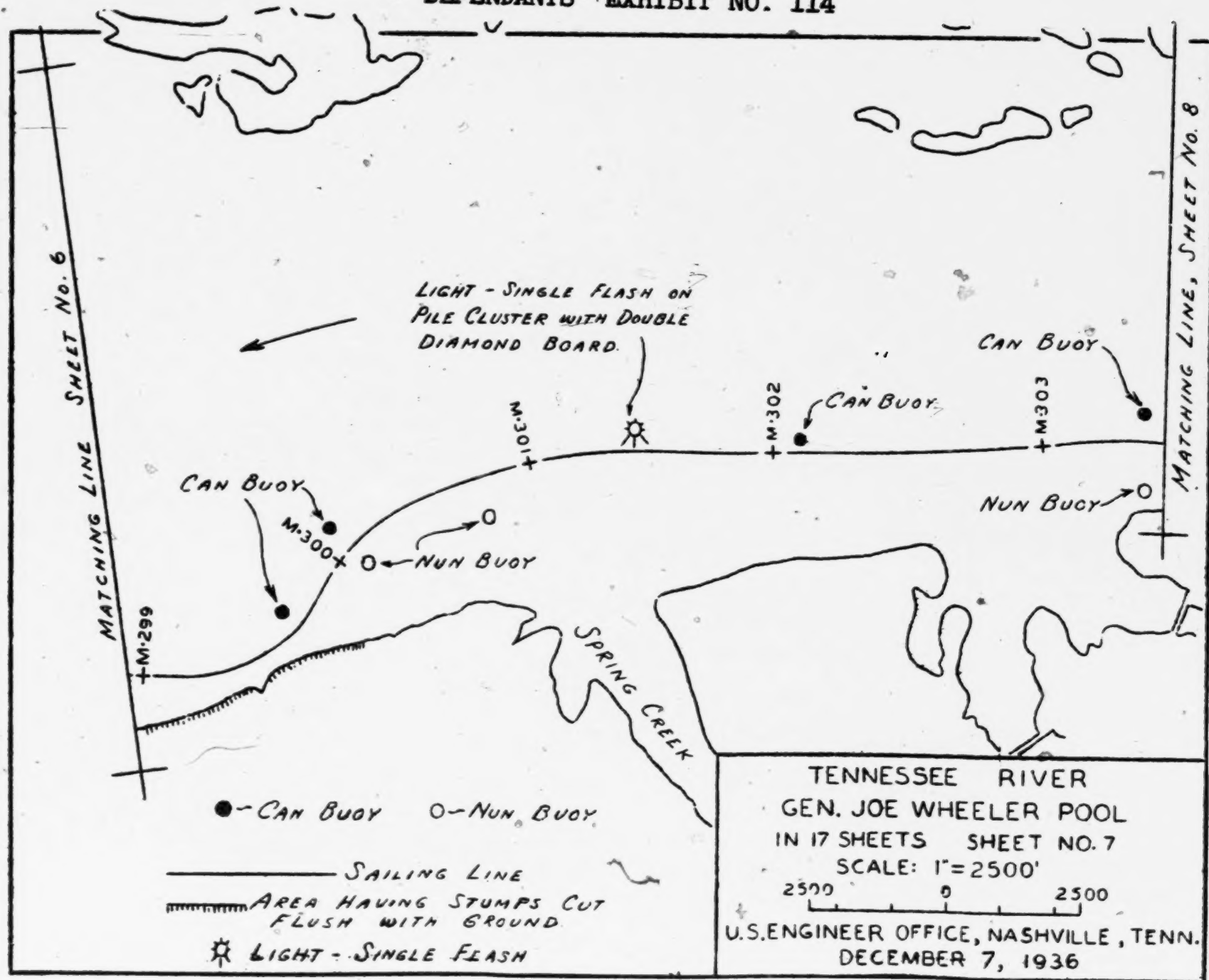




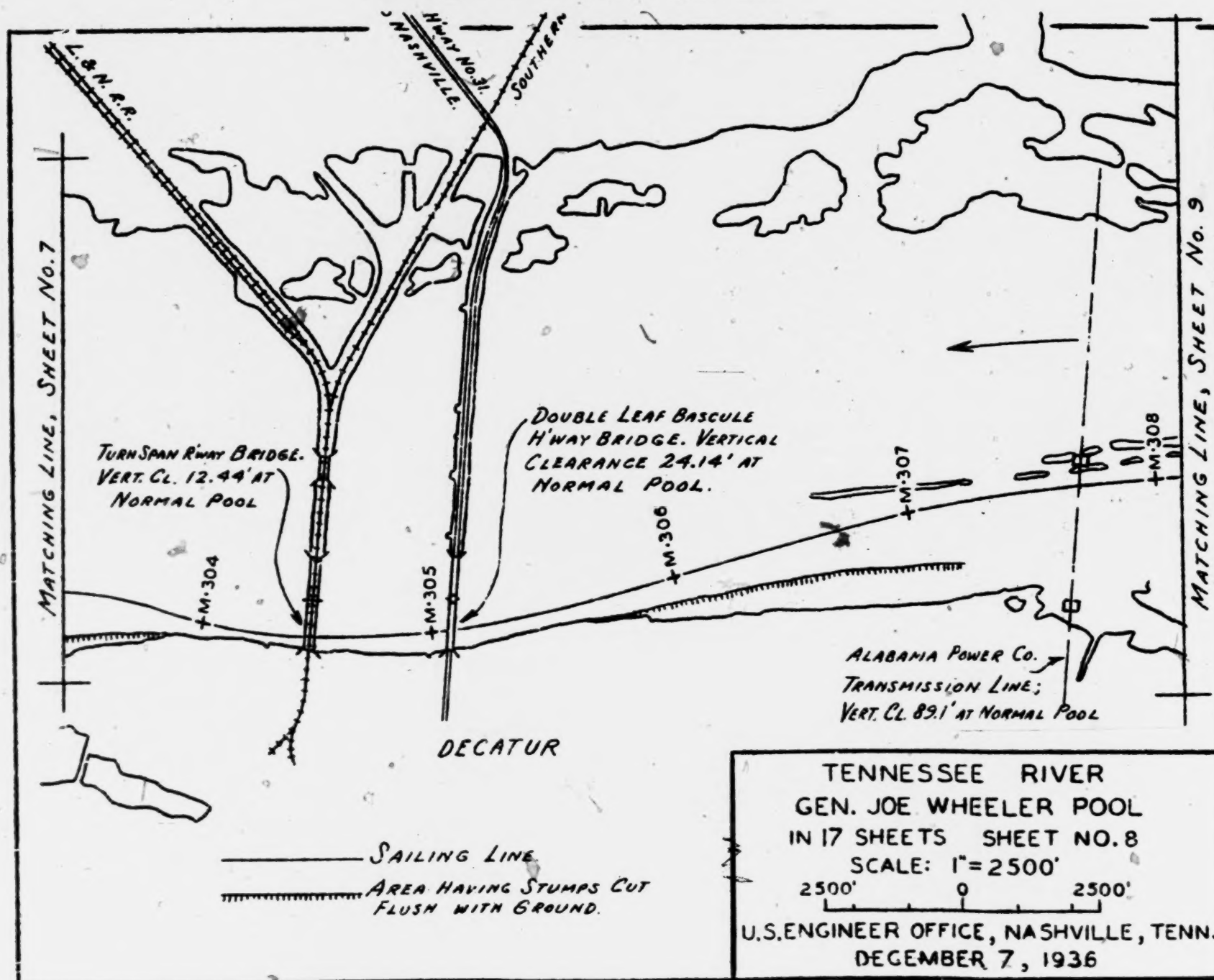
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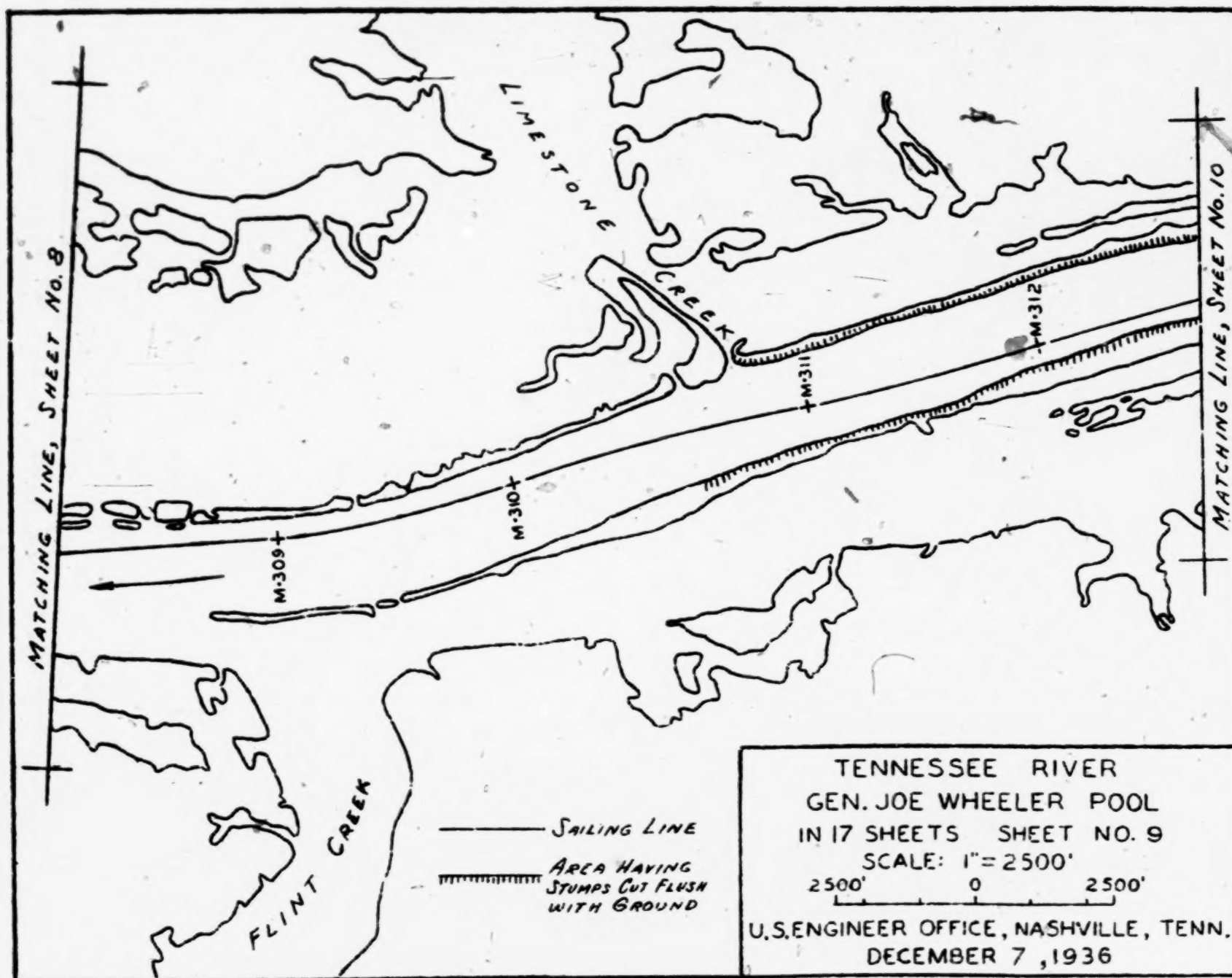
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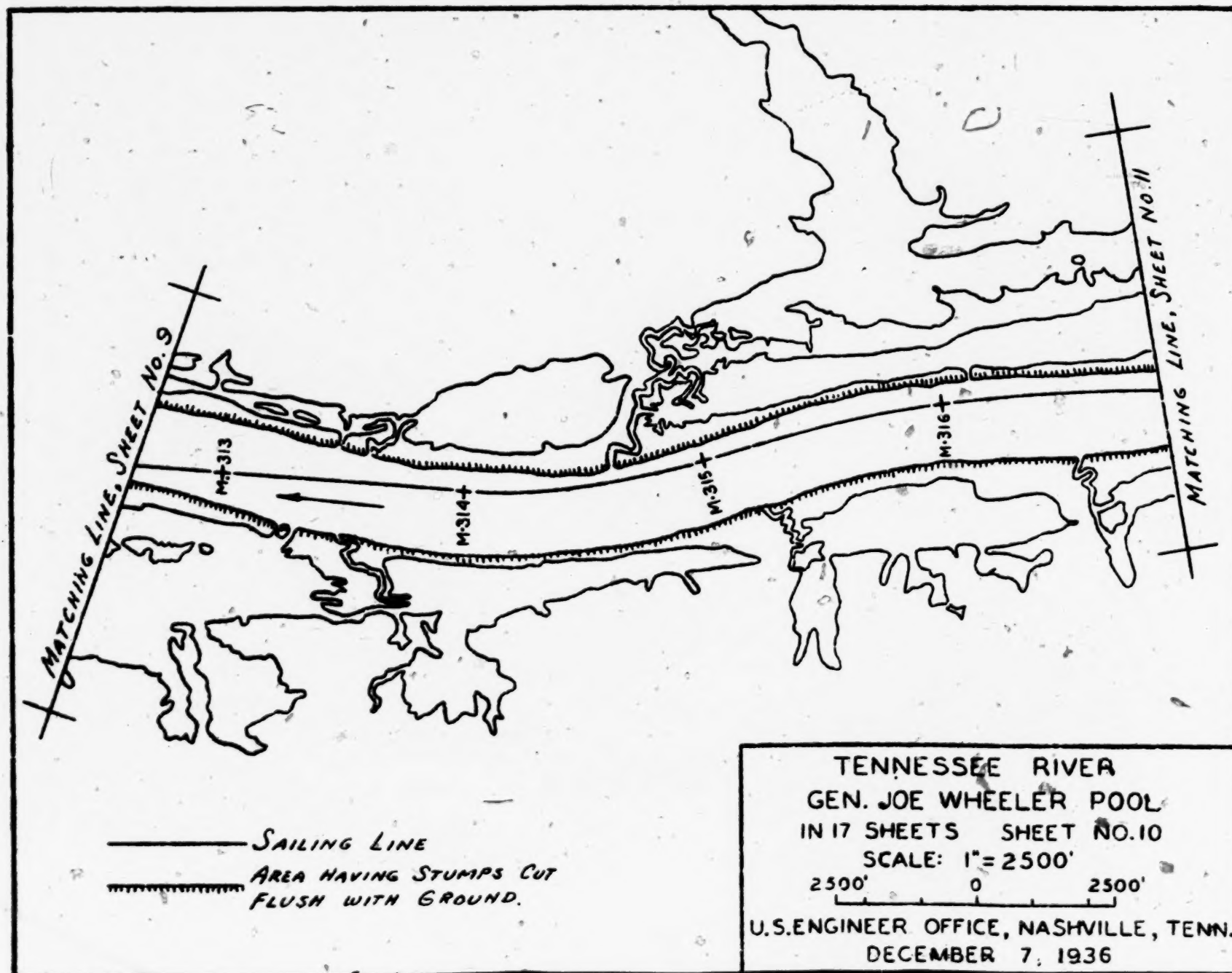
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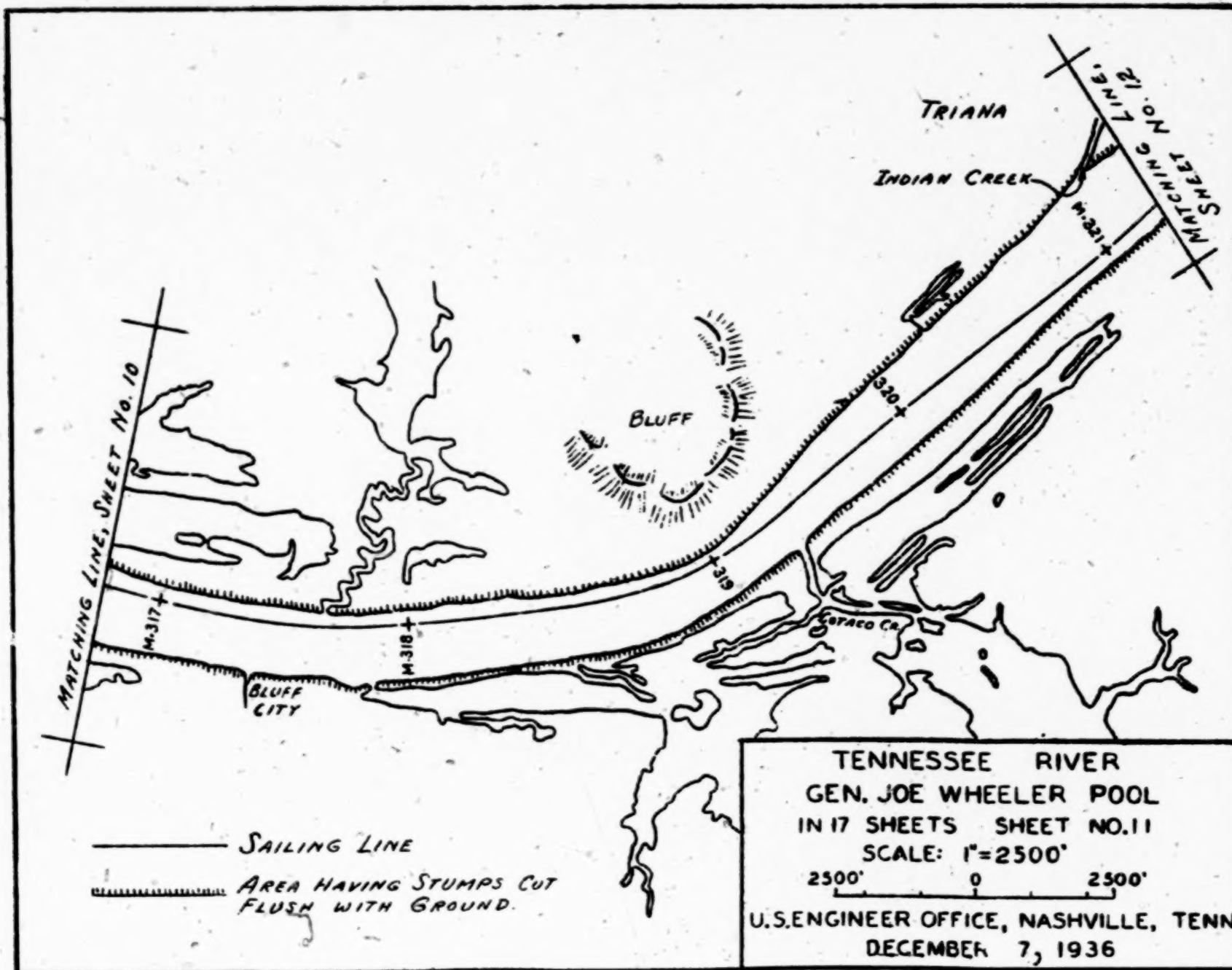


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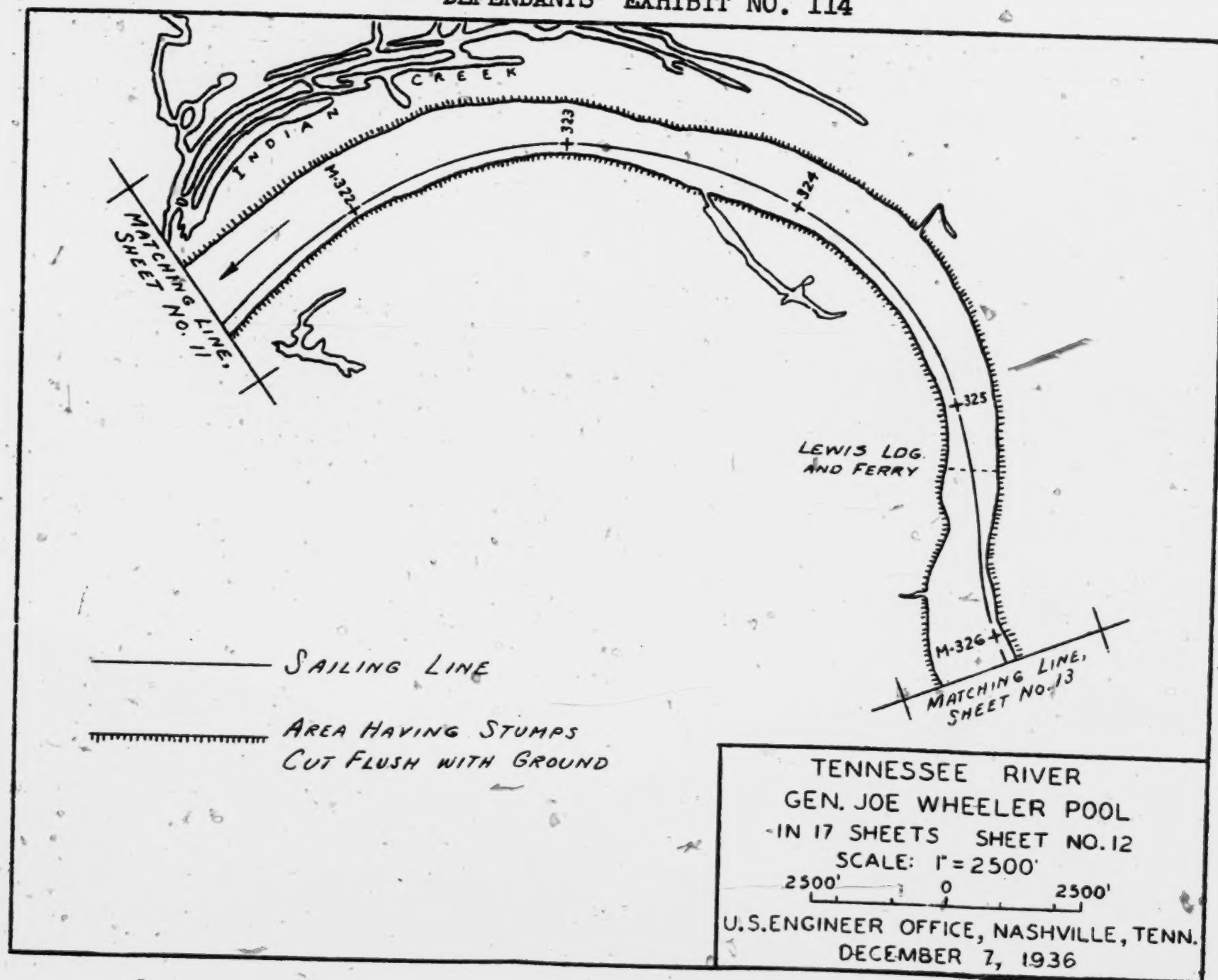


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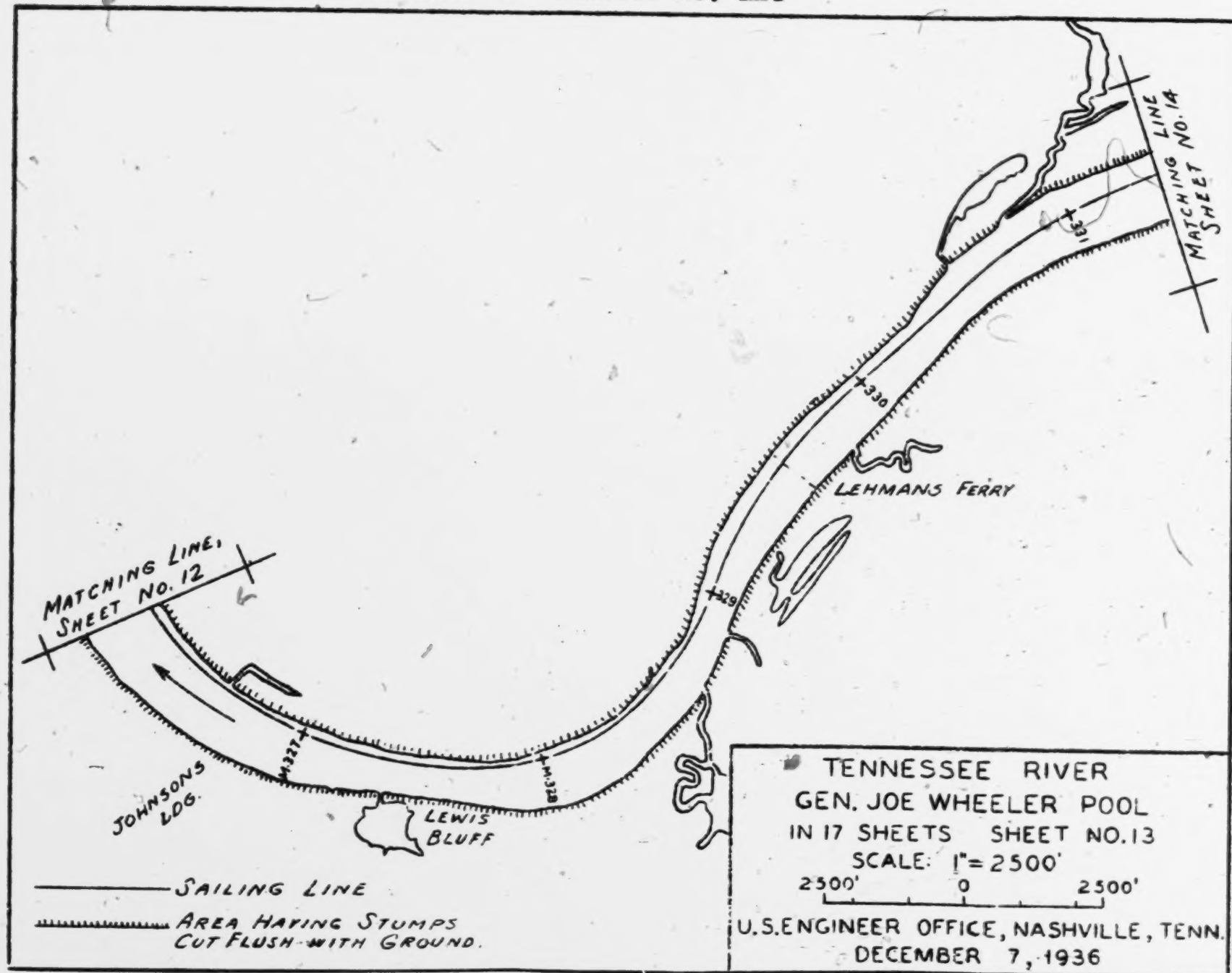




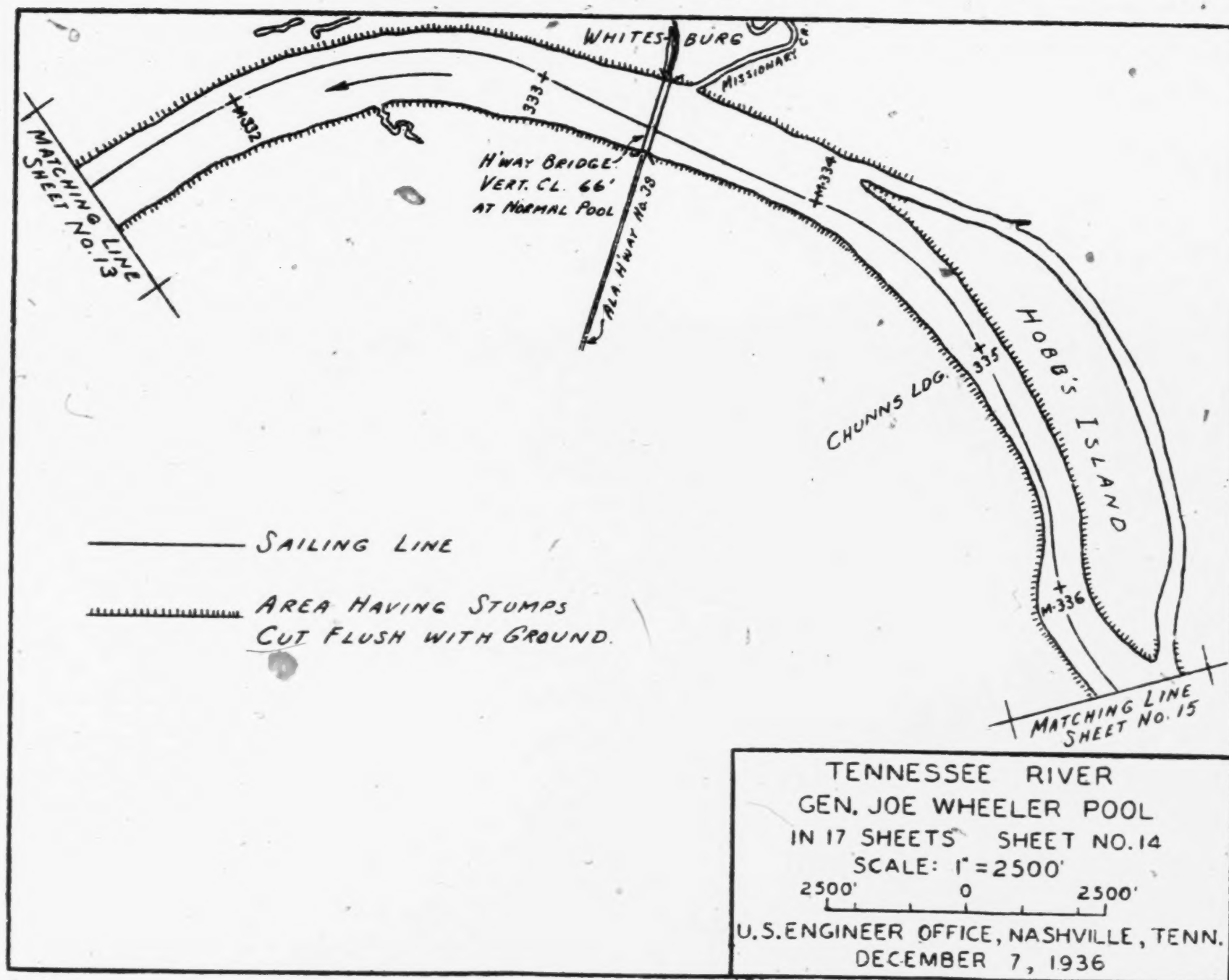
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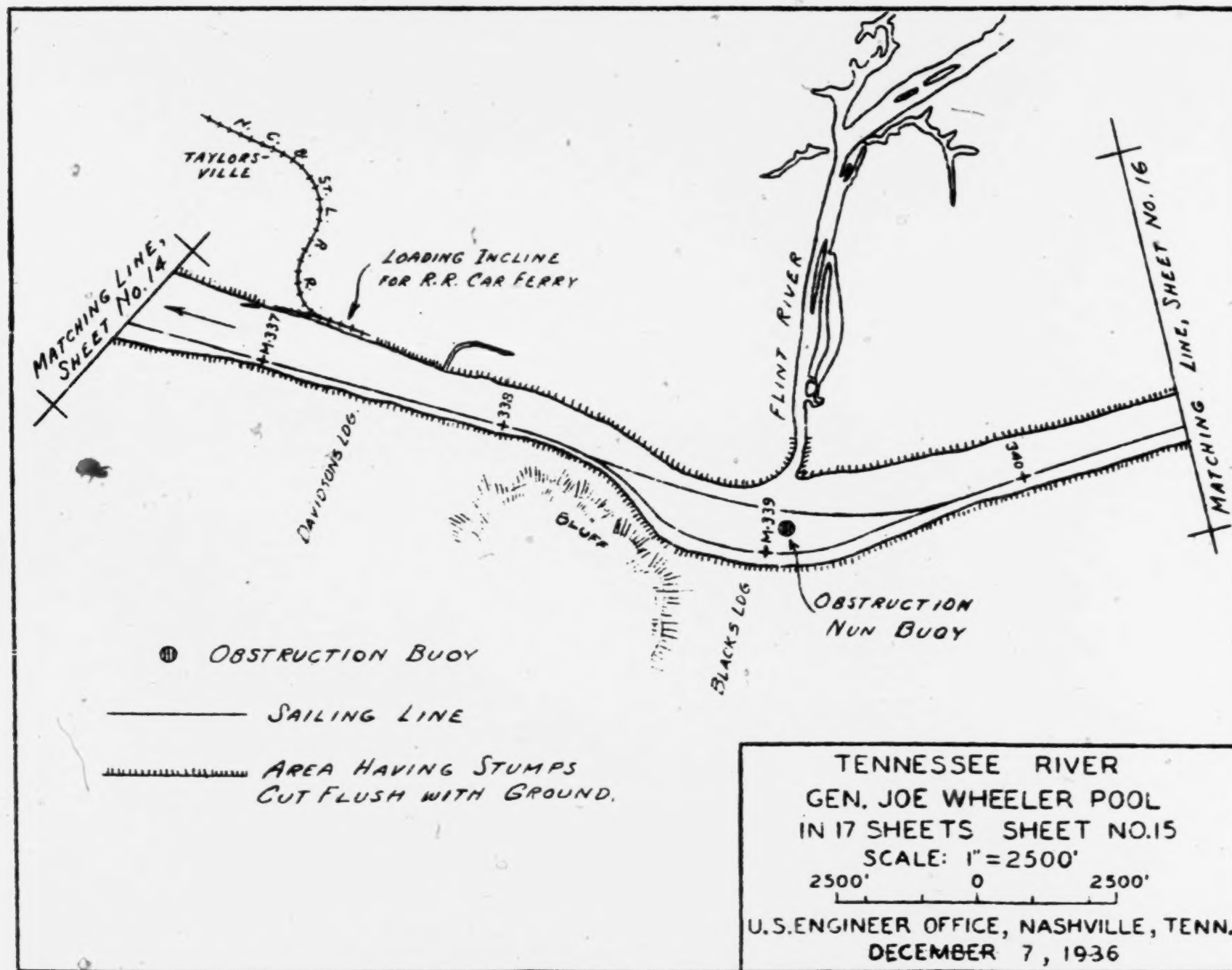
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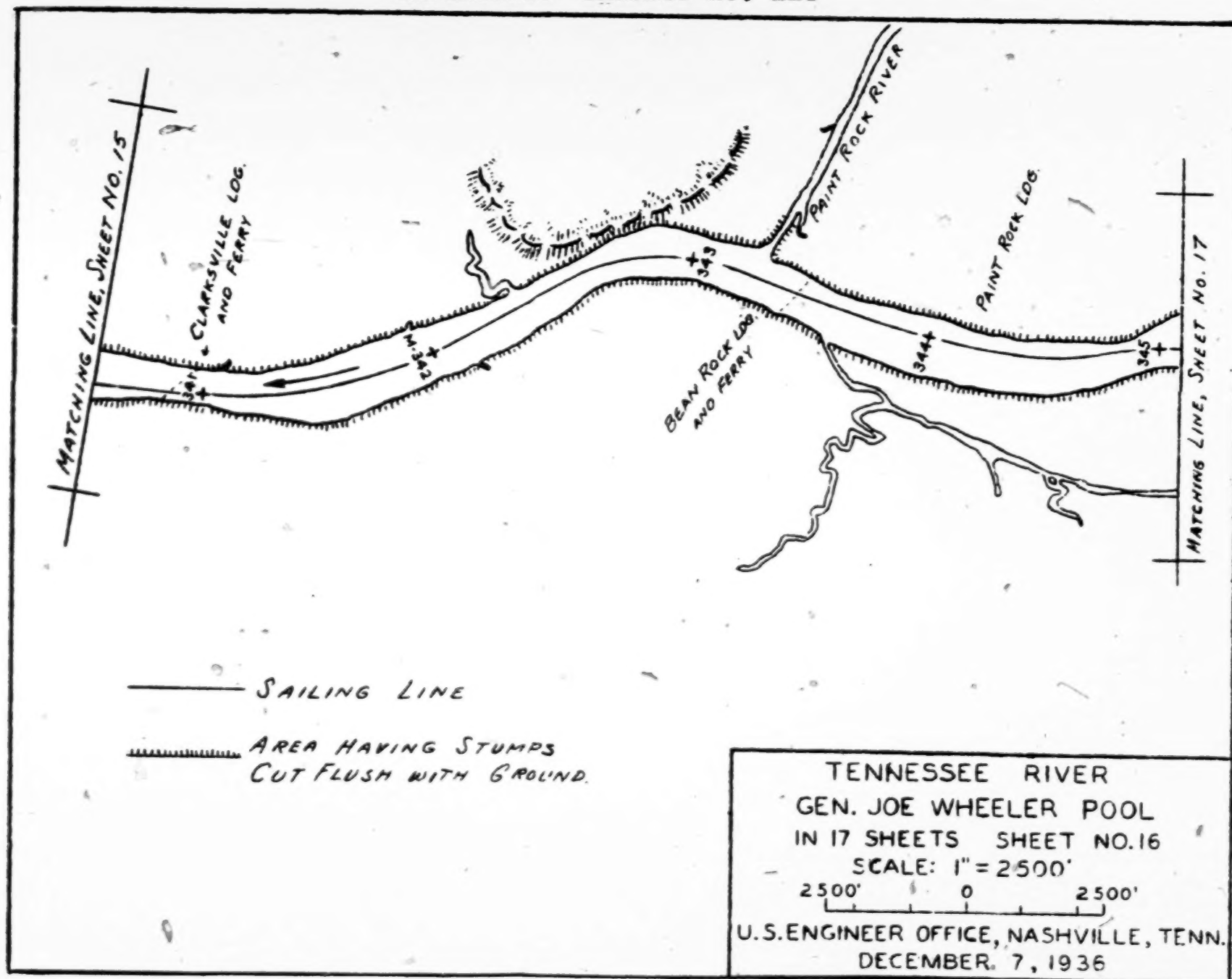
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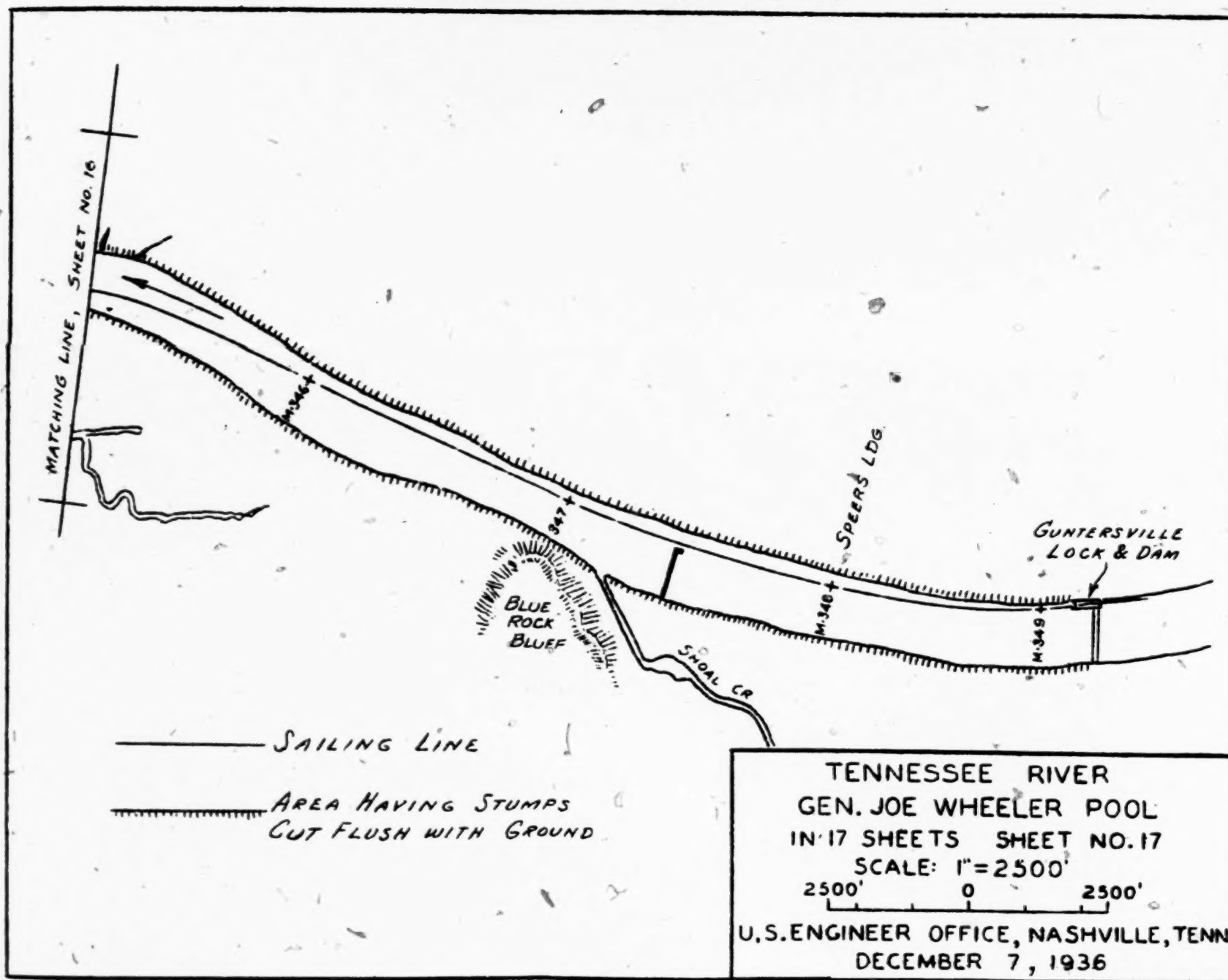
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DEFENDANTS' EXHIBIT NO. 114



DEFENDANTS' EXHIBIT NO. 114



4132

[fol. 4211] DEFENDANTS' EXHIBIT No. 115

Theoretical Efficiencies of the Tennessee River Waterway

Low Dam Development

Item	Time Consumed (Hours)	Theoretical Time (Hours)	Time Lost (Hours)	Efficiency Loss %
Lockages.....	37.5	0	37.5	10.3
Running upstream.....	185.0	117.8	67.2	18.5
Running downstream.....	107.9	117.7	-9.8	-2.7
Miscellaneous delays.....	33.0	0	33.0	9.1
Total.....	363.4	235.5	127.9	35.2

Net efficiency—64.8%.

High Dam Development

Item	Time Consumed (Hours)	Theoretical Time (Hours)	Time Lost (Hours)	Efficiency Loss %
Lockages.....	13.5	0	13.5	4.7
Running upstream.....	129.5	117.8	11.7	4.1
Running downstream.....	115.6	117.7	-2.1	-0.7
Miscellaneous delays.....	25.9	0	25.9	9.1
Total.....	284.5	235.5	49.0	17.2

Net efficiency—82.8%.

Note.—The above calculations refer to a round trip, Paducah, Ky., to Knoxville, Tenn., and return. The lockage times are calculated on the basis of single lockages. The upstream running times are based on a still water towing speed of 5.5 m.p.h. minus current velocities of 2 m.p.h. with the low dams and minus 0.5 m.p.h. with the high dams. The downstream running times are based on a still water towing speed of 5.5 m.p.h. plus one-fourth of the current velocities. Miscellaneous delays are taken as 10% of the sum of the other three items.

[fol. 4212] DEFENDANTS' EXHIBIT No. 116

Map entitled "Tennessee River and Interconnecting Waterways".

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 117 (Excluded)

House Document No. 254, 75th Congress, 1st Session.

(Omitted)

4134

[fol. 4213] DEFENDANTS' EXHIBIT No. 118

Chart entitled "Some Industrial and Commercial Centers Reached By Interior Waterway System with Waterway Distance Between Them".

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 119

Map entitled "Population Concentration Along Interior Waterway System".

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 120

Chart entitled "Principal Crops Produced In Tennessee Valley".

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 121

Chart entitled "Types of Forest Resources In and Around Tennessee Valley".

(Original Exhibit)

[fol. 4214] DEFENDANTS' EXHIBIT No. 122

Chart entitled "Producing Centers For Some Basic Minerals In The Tennessee Valley."

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 123

Map entitled "Traffic Producing Regions Touched By
Interior Waterway System".

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 124

Chart entitled "Railroad Freight Origins and Termina-
tions in Tennessee Valley and Contiguous Areas—1932"

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 125

Chart entitled "Ton—Miles of Traffic on the Tennessee
River, 1933-1936".

(Original Exhibit)

(Here follow four photolithographs, side folios 4215-4218)

**ESTIMATE OF TONNAGE MOVEMENT ON TENNESSEE RIVER FOR 1937
ASSUMING COMPLETE NAVIGATION FACILITIES**

- Note: (a) This estimate is based on present tonnage potentialities and makes no allowance for future growth of traffic.
- (b) This estimate is confined to specific tonnage movements from or to points on or near the Tennessee River, concerning which definite information was obtained from shippers or receivers. It does not cover all probable commodities, nor all possible shipping and receiving points in the territory contiguous to the Tennessee Valley. For example, movements to and from Atlanta, Georgia, and district are not included.

(Movements Shown in Tons of 2000 Pounds)

<u>Commodity</u>	<u>Annual Inbound Movement</u>	<u>Annual Outbound Movement</u> ^{1/}	<u>Annual Movements Inbound & Outbound</u>	<u>Annual Savings by Use of Water Trans- portation</u>	<u>Average Sav- ings per Ton by Use of Water Trans- portation</u>
Agricultural Implements	4,800	3,000	7,800	\$ 20,358.00	\$2.61
Aluminum & Bauxite Ore					
Concentrates	18,000	5,000	23,000	25,160.00	1.09
Asphalt	13,102		13,102	14,660.88	1.12
Automobiles	22,500		22,500	93,323.00	4.15
Canned Goods	20,800	15,000	35,800	67,770.00	1.89
Cans, Sheet Iron & Steel	4,000		4,000	10,400.00	2.60
Cement		100,000	100,000	68,000.00	.68
Chemicals	19,250	22,500	41,750	73,445.00	1.76
Clay		36,400	36,400	24,388.00	.67
Coffee (Green)	6,500		6,500	8,320.00	1.28
Corn Syrup, Glucose, & Corn Starch	10,450		10,450	17,521.50	1.67
Cotton	46,000	62,000	108,000	232,500.00	2.15
Gasoline & Kerosene	505,000		505,000	2,105,200.00	4.17 ✓
Glassware, Fruit Jars & Bottles	4,500	6,000 ✓	10,500	19,252.00	1.83
Grain, Grain Products, Cereals & Rice	345,750		345,750	440,840.00	1.28
Iron & Steel Articles	249,200	878,000	1,127,200	1,693,703.00	1.50
Marble & Building Stone		45,000	45,000	45,000.00	

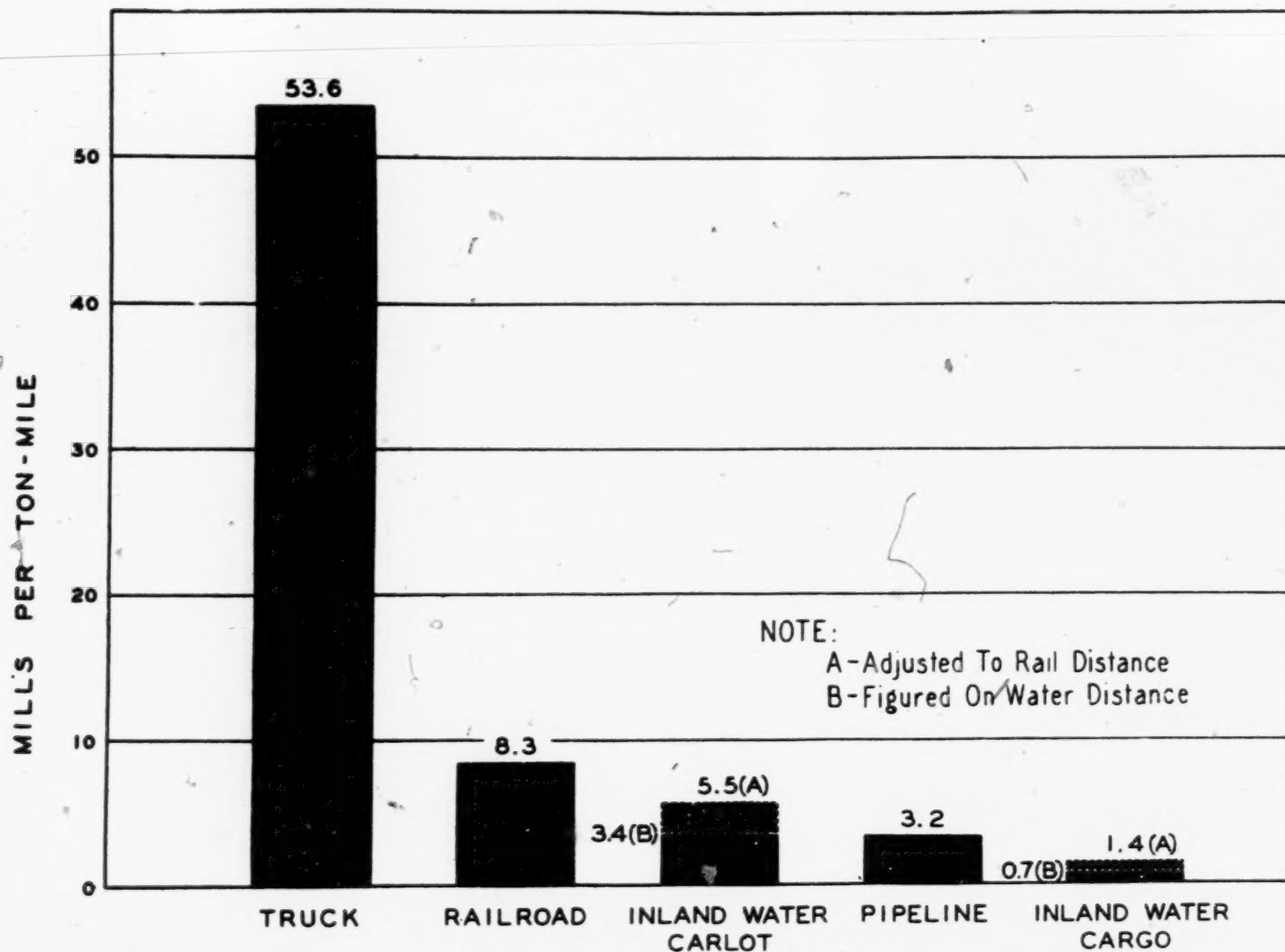
Asphalt	13,102		13,102	14,860.88	1.12
Automobiles	22,500		22,500	93,323.00	4.15
Canned Goods	20,800	15,000	25,800	67,770.00	1.89
Cans, Sheet Iron & Steel	4,000		4,000	10,400.00	2.60
Cement		100,000	100,000	68,000.00	.68
Chemicals	19,250	22,500	41,750	73,445.00	1.76
Clay		36,400	36,400	24,388.00	.67
Coffee (Green)	6,500		6,500	8,320.00	1.28
Corn Syrup, Glucose, & Corn Starch	10,450		10,450	17,521.50	1.67
Cotton	46,000	62,000	108,000	232,500.00	2.15
Gasoline & Kerosene	505,000		505,000	2,105,200.00	4.17 ✓
Glassware, Fruit Jars & Bottles	4,500	6,000 ✓	10,500	19,252.00	1.83
Grain, Grain Products, Cereals & Rice	345,750		345,750	440,840.00	1.28
Iron & Steel Articles	249,200	878,000	1,127,200	1,693,703.00	1.50
Marble & Building Stone		45,000	45,000	45,900.00	1.02
Matches	2,200		2,200	6,225.00	2.83
Packing House Products	52,750		52,750	123,935.00	2.35
Paper & Paper Articles	14,100	30,000	44,100	48,948.00	1.11
Paints & Varnishes	6,200		6,200	14,927.00	2.41
Roofing - Composition	15,900		15,900	23,119.00	1.45
Salt	25,100		25,100	34,764.00	1.39
Sand & Gravel		165,000	165,000	25,050.00	.15
Soap & Soap Powder	25,300		25,300	44,948.00	1.78
Sugar	34,000		34,000	48,600.00	1.43
Sulphur	10,200		10,200	20,120.50	1.97
Superphosphate		18,850	18,850	15,161.00	.80
Tires & Tubes	2,850	10,000	12,850	34,578.00	2.69
Tobacco (Unmanufactured)	12,000	1,200	13,200	28,056.00	2.13
Zinc Ore Concentrates		20,000	20,000	13,000.00	.65
	1,470,452	1,417,950	2,888,402	\$5,442,172.88	\$1.88
Coal & Coke ^{2/}			1,311,423	681,165.60	.52
Forest Products ^{2/}			1,486,907	1,612,056.60	1.08
Total			5,686,732	\$7,735,395.08	\$1.36
Present Annual Tonnage ^{3/}			1,625,160	1,709,263.84	1.05
Grand Total			7,311,892	\$9,444,658.92	\$1.29

NOTE: Method of obtaining average savings per ton is division of total savings by total tonnage

1/ Outbound includes traffic having both origin and destination on the Tennessee River.

2/ Source: House Document No. 328, 71st Congress, 2nd Session, Appendix G, Section A, Table 26 (Supplementary).

3/ Average of 1933, 1934, 1935 and 1936 tonnages as reported by Chief of Engineers, U. S. Army.



COMPARATIVE UNIT FUNCTION COSTS - 1932

SOURCES: Freight Traffic Report, Vol. I, p79

- Merchandise Traffic Report, Exhibit 117-S

STATEMENT SHOWING RATIO OF TRANSPORTATION SAVINGS
BY USE OF THE TENNESSEE RIVER
TO TRANSPORTATION CHARGES BY ALL-RAIL ROUTES
ON TONNAGES OBTAINED FROM RECENT TRAFFIC SURVEY

Commodity	Annual Tonnage	Transportation Charges:		Savings By Water Transportation	Ratio of Savings to All-Rail Charges (Percent)
		All-Rail	All-Water or Rail-Water		
Agricultural Implements	7,800	\$101,850.00	\$81,492.00	\$20,358.00	20.0
Aluminum and Bauxite					
Ore Concentrates	23,000	125,800.00	100,640.00	25,160.00	20.0
Asphalt	13,102	73,304.40	58,643.52	14,660.88	20.0
Automobile	22,500	628,299.00	534,976.00	93,323.00	14.8
Canned Goods	35,800	346,734.00	278,964.00	67,770.00	19.5
Cans, Sheet Iron & Steel	4,000	52,000.00	41,600.00	10,400.00	20.0
Cement	100,000	340,000.00	272,000.00	68,000.00	20.0
Chemicals	41,750	321,165.00	247,720.00	73,445.00	22.9
Clay	36,400	47,320.00	22,932.00	24,388.00	51.5
Coffee (Green)	6,500	41,600.00	33,280.00	8,320.00	20.0
Corn Syrup, Glucose & Corn Starch	10,450	91,902.50	74,381.00	17,521.50	19.1
Cotton	108,000	1,189,560.00	957,060.00	232,500.00	19.5
Gasoline & Kerosene	505,000	4,611,750.00	2,506,550.00	2,105,200.00	45.6
Glassware, Fruit Jars & Bottles	10,500	103,100.00	83,848.00	19,252.00	18.7
Grain, Grain Products, Cereals & Rice	345,750	2,211,635.00	1,770,795.00	440,840.00	19.9
Iron & Steel Articles	1,127,200	8,831,387.00	7,137,684.00	1,693,703.00	19.2
Marble & Building Stone	45,000	227,400.00	181,500.00	45,900.00	20.2
Matches	2,200	31,092.00	24,867.00	6,225.00	20.0
Packing House Products	52,750	619,845.00	495,910.00	123,935.00	20.0
Paper & Paper Articles	44,100	243,900.00	194,952.00	48,948.00	20.1
Paints & Varnishes	6,200	75,384.00	60,457.00	14,927.00	19.8
Roofing, Composition	15,900	121,195.00	98,076.00	23,119.00	19.1
Salt	25,100	191,335.00	156,571.00	34,764.00	18.2
Sand & Gravel	165,000	125,250.00	100,200.00	25,050.00	20.0
Soap & Soap Powder	25,300	224,028.00	179,080.00	44,948.00	20.1

		2,000	32,000.00	41,800.00	10,400.00	20.0
Cement	100,000	340,000.00	272,000.00	68,000.00	20.0	
Chemicals	41,750	321,165.00	247,720.00	73,445.00	22.9	
Clay	36,400	47,320.00	22,932.00	24,388.00	51.5	
Coffee (Green)	6,500	41,600.00	33,280.00	8,320.00	20.0	
Corn Syrup, Glucose & Corn Starch	10,450	91,902.50	74,381.00	17,521.50	19.1	
Cotton	108,000	1,189,560.00	957,060.00	232,500.00	19.5	
Gasoline & Kerosene	505,000	4,611,750.00	2,506,550.00	2,105,200.00	45.6	
Glassware, Fruit Jars & Bottles	10,500	103,100.00	83,848.00	19,252.00	18.7	
Grain, Grain Products, Cereals & Rice	345,750	2,211,635.00	1,770,795.00	440,840.00	19.9	
Iron & Steel Articles	1,127,200	8,831,387.00	7,137,684.00	1,693,703.00	19.2	
Marble & Building Stone	45,000	227,400.00	181,500.00	45,900.00	20.2	
Matches	2,200	31,092.00	24,867.00	6,225.00	20.0	
Packing House Products	52,750	619,845.00	495,910.00	123,935.00	20.0	
Paper & Paper Articles	44,100	243,900.00	194,952.00	48,948.00	20.1	
Paints & Varnishes	6,200	75,384.00	60,457.00	14,927.00	19.8	
Roofing, Composition	15,900	121,195.00	98,076.00	23,119.00	19.1	
Salt	25,100	191,335.00	156,571.00	34,764.00	18.2	
Sand & Gravel	165,000	125,250.00	100,200.00	25,050.00	20.0	
Soap & Soap Powder	25,300	224,028.00	179,080.00	44,948.00	20.1	
Sugar	34,000	236,600.00	188,000.00	48,600.00	20.1	
Sulphur	10,200	103,444.00	83,323.50	20,120.50	19.5	
Superphosphate	18,850	76,311.25	61,150.25	15,161.00	19.9	
Tires & Tubes	12,850	156,180.00	121,602.00	34,578.00	22.1	
Tobacco(Unmanufactured)	13,200	166,200.00	138,144.00	28,056.00	16.9	
Zinc Ore Concentrates	20,000	89,000.00	76,000.00	13,000.00	14.6	
	2,888,402	21,804,571.15	\$16,362,398.27	\$5,442,172.88	25.0	

STATEMENT SHOWING RATIO OF TRANSPORTATION SAVINGS BY USE OF THE TENNESSEE RIVER TO
TRANSPORTATION CHARGES BY RAIL OR MOTOR-TRUCK ON PRESENT ANNUAL TENNESSEE R. TONNAGE

Commodity	Annual- Tonnage	Transportation Charges		Savings By Tenn. River	Ratio of Savings to Rail Or Truck Charges(Percent)
		By Rail Or Truck	By Tenn. River		
Forest Products	117,532	\$470,128.00	\$71,694.52	\$398,433.48	84.7
Sand & Gravel	1,399,665	1,399,665.00	349,916.25	1,049,748.75	75.0
Cement	71,874	172,497.60	29,468.34	143,029.26	82.9
Miscellaneous	33,154	132,616.00	24,865.50	107,750.50	81.2
Farm Products	2,935	12,914.00	2,612.15	10,301.85	79.8
TOTAL	1,625,160	\$2,187,820.60	\$478,556.76	\$1,709,263.84	78.1

¹/₂ Average of 1933, 1934, 1935 and 1936 tonnage as reported by Chief of Engineers,
U. S. Army

DEFENDANTS' EXHIBIT NO. 129

RAILROAD FREIGHT TRAFFIC

Southern District

	Revenue Tons Carried	Ratio To 1926=100	Present Increase Or Decrease From Preceding Year	Revenue Ton Miles	Ratio To 1926=100	Present Increase Or Decrease From Preceding Year
1926 Base	461,263,390	100.00	* * * *	101,426,273,438	100.00	* * * *
1927	449,753,073	97.50	- 2.50	96,338,368,210	94.98	- 5.02
1928	427,026,767	92.58	- 5.05	91,987,726,895	90.66	- 4.55
1929	429,575,010	93.13	+ 0.60	94,252,031,465	92.93	+ 2.49
1930	383,374,187	83.11	-10.76	83,787,261,765	82.61	-11.10
1931	308,708,997	66.93	-19.48	69,525,377,692	68.55	-17.02
1932	231,583,273	50.21	-24.98	54,476,716,367	53.71	-21.64
1933	253,680,864	55.00	+ 9.54	58,934,144,975	58.11	+ 8.18
1934	271,954,612	58.96	+ 7.20	62,366,517,800	61.49	+ 5.82
1935	282,743,317	61.30	+ 3.97	65,151,873,280	64.24	+ 4.47
1936	342,222,485	74.19	+ 21.04	78,313,705,936	77.21	+ 20.20
Est. 1937	364,364,000	78.99	+ 6.47	83,380,000,000	82.21	+ 6.47

Southern Region

1926 Base	318,241,433	100.00	* * * *	61,067,786,024	100.00	* * * *
1927	307,029,921	96.48	- 3.52	58,431,746,321	95.68	- 4.32
1928	291,385,723	91.56	- 5.10	55,770,538,066	91.33	- 4.55
1929	283,239,695	89.00	- 2.80	55,163,326,785	90.33	- 1.09
1930	247,130,374	77.65	-12.75	47,010,592,476	76.98	-14.78
1931	193,634,011	60.84	-21.65	37,675,401,754	61.69	-19.86
1932	137,944,462	43.35	-28.76	28,218,231,216	46.21	-25.10
1933	148,682,685	46.71	+ 7.78	30,040,782,142	49.19	+ 6.46
1934	160,061,113	50.30	+ 7.65	31,921,183,179	52.27	+ 6.26
1935	168,433,417	52.93	+ 5.23	34,125,127,235	55.88	+ 6.90
1936	204,649,650	64.31	+ 21.50	41,155,572,004	67.39	+ 20.60
Est. 1937	219,425,000	68.95	+ 7.22	44,127,000,000	72.26	+ 7.22

- Sources: 1. Statistics of Railways in the United States, 1926-1936
 2. Freight Commodity Statistics I.C.C. Statement 37100
 3. Revenue Freight Loaded and Received from Connections - Association of American Railroads CS-54A for November 27, 1937. (48 weeks used to estimate 1937 annual figure.)

...river Terminal, Viz:

From:		Lorristown, Tennessee	Newport, Tennessee	Clinton, Tennessee	Sevierville, Tennessee	Maryville, Tennessee	Lenoir City, Tennessee	
Houston, Texas (1)	AR WT	1280 857 <u>423</u>	1320 853 <u>456</u>	1280 813 <u>467</u>	1440 829 <u>611</u>	1280 807 <u>473</u>	1260 827 <u>433</u>	
Baton Rouge, and New Orleans, Louisiana (2)	AR WT	1040 749 <u>291</u>	1080 755 <u>325</u>	1000 705 <u>295</u>	1120 721 <u>399</u>	1000 699 <u>301</u>	980 719 <u>261</u>	
Woodriver, Illinois (3)	AR WT	1000 435 <u>565</u>	1020 441 <u>579</u>	960 391 <u>569</u>	1120 407 <u>713</u>	980 385 <u>595</u>	980 405 <u>575</u>	
Louisville, Kentucky	AR WT	780 473 <u>307</u>	800 479 <u>321</u>	720 429 <u>291</u>	880 445 <u>435</u>	760 423 <u>337</u>	760 443 <u>317</u>	
Cincinnati, Ohio	AR WT	800 526 <u>274</u>	820 532 <u>288</u>	740 482 <u>258</u>	900 498 <u>402</u>	760 476 <u>284</u>	780 496 <u>284</u>	
Shreveport, Louisiana	AR WT	1140 790 <u>350</u>	1180 796 <u>384</u>	1120 746 <u>374</u>	1280 762 <u>518</u>	1120 740 <u>380</u>	1100 760 <u>340</u>	Total Average Saving
Average Saving		\$3.68	\$3.92	\$3.76	\$5.13	\$3.95	\$3.58	\$4.02

AR - All-Rail

WT - Water-Truck

(1) Also applies from Beaumont, Galveston, Texas City, and Port Arthur, Texas; Lake Charles, Louisiana.

(2) Also applies from Gretna, Norco, and Destrehan, Louisiana.

(3) Also applies from St. Louis, Missouri, East St. Louis, and Alton, Illinois.

Water-Truck rates constructed as follows:

Water movement to river terminal - 4 mills per ton-mile.

Truck movement beyond - 2 cents per ton-mile.

Highway miles from Knoxville: Morristown - 41, Newport - 44, Clinton - 19, Sevierville - 27, Maryville - 16, Lenoir City - 26.

Authorities: Roy Pope's Petroleum Tariff No. 16-X, I.C.C. 195.

R. A. Sperry's Petroleum Tariff No. 51-B, I.C.C. 326.

J. R. Peel's Petroleum Tariff No. 123-C, I.C.C. 2791.

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[fol. 4219] DEFENDANTS' EXHIBIT No. 130

Chart entitled "Tonnage, Actual and Estimated, Moving
on Mississippi River System Since 1814".

(Original Exhibit)

DEFENDANTS' EXHIBIT NO. 131

GASOLINE AND KEROSENE

Recapitulation for Movements

<u>Origin</u>	<u>Destination</u>	<u>Tonnage</u>	<u>Saving Per Ton</u>	<u>Total Saving</u>
	Knoxville, Tenn.	100,000	\$4.14	\$414,000
	Subsidiary Stations	50,000	4.02	201,000
*Houston, Texas)	Chattanooga, Tenn.	100,000	4.38	438,000
*New Orleans, La.)	Subsidiary Stations	30,000	3.93	117,900
*Baton Rouge, La.)				
*Shreveport, La.)	Guntersville, Ala.	15,000	5.17	77,650
*Wood River, Ill.)	Subsidiary Stations	35,000	4.49	157,150
*St. Louis, Mo.)				
*Louisville, Ky.)	Decatur, Ala.	35,000	3.94	137,900
*Cincinnati, Ohio)	Subsidiary Stations	40,000	3.88	155,200
	Florence, Ala.	25,000	4.29	107,250
	Subsidiary Stations	75,000	3.99	299,250
		505,000		\$2,105,200

Average Saving Per Ton = \$4.17

DEFENDANTS' EXHIBIT NO. 131

COMPARATIVE RATES ON GASOLINE AND KEROSENE BY RAIL AND BY WATER

Rates in cents per ton of 2,000 pounds

From:	To:	Chattanooga, Tennessee	Florence, Alabama	Decatur, Alabama	Knoxville, Tennessee	Guntersville, Alabama
Houston, (1) Texas	R	1160	910	950	1260	1120
	W	701	617	679	775	660
		<u>459</u>	<u>293</u>	<u>271</u>	<u>485</u>	<u>460</u>
Baton Rouge, (2) New Orleans, Louisiana	R	860	760	670	1000	690
	W	592	509	529	667	551
		<u>268</u>	<u>251</u>	<u>141</u>	<u>333</u>	<u>441</u>
Wood River, (3) Illinois	R	920	860	880	960	960
	W	279	197	216	353	239
		<u>641</u>	<u>663</u>	<u>664</u>	<u>607</u>	<u>721</u>
Louisville, Kentucky	R	780	780	780	740	840
	W	318	235	255	391	276
		<u>462</u>	<u>545</u>	<u>525</u>	<u>349</u>	<u>564</u>
Cincinnati, Ohio	R	800	880	860	760	880
	W	371	288	308	444	329
		<u>429</u>	<u>592</u>	<u>552</u>	<u>316</u>	<u>551</u>
Shreveport, Louisiana	R	1000	780	820	1100	960
	W	633	552	611	708	593
		<u>367</u>	<u>228</u>	<u>209</u>	<u>392</u>	<u>367</u>
Average Savings		\$4.38	\$4.29	\$3.94	\$4.14	\$5.17

R: All-Rail

W: All-Water

- (1) Also applies from Beaumont, Galveston, Texas City, and Port Arthur, Texas; Lake Charles, Louisiana.
- (2) Also applies from Gretna, Norco, and Destrehan, Louisiana.
- (3) Also applies from St. Louis, Missouri, East St. Louis, and Alton, Illinois.

From:	To:	Chattanooga, Tennessee	Florence, Alabama	Decatur, Alabama	Knoxville, Tennessee	Guntersville, Alabama
Houston, (1)	R	1160	910	950	1260	1120
Texas	W	<u>701</u>	<u>617</u>	<u>679</u>	<u>775</u>	<u>660</u>
		459	293	271	485	460
Baton Rouge, (2)	R	860	760	670	1000	690
New Orleans,	W	<u>592</u>	<u>509</u>	<u>529</u>	<u>667</u>	<u>551</u>
Louisiana		268	251	141	333	441
Wood River, (3)	R	920	860	880	960	960
Illinois	W	<u>279</u>	<u>197</u>	<u>216</u>	<u>353</u>	<u>239</u>
		641	663	664	607	721
Louisville,	R	780	780	750	740	840
Kentucky	W	<u>318</u>	<u>235</u>	<u>255</u>	<u>391</u>	<u>276</u>
		462	545	525	349	564
Cincinnati,	R	800	880	860	760	880
Ohio	W	<u>371</u>	<u>288</u>	<u>308</u>	<u>444</u>	<u>329</u>
		429	592	562	316	551
Shreveport,	R	1000	780	820	1100	960
Louisiana	W	<u>633</u>	<u>552</u>	<u>611</u>	<u>708</u>	<u>593</u>
		367	228	209	392	367
Average Savings		\$4.38	\$4.29	\$3.94	\$4.14	\$5.17

R: All-Rail

W: All-Water

- (1) Also applies from Beaumont, Galveston, Texas City, and Port Arthur, Texas; Lake Charles, Louisiana.
- (2) Also applies from Gretna, Norco, and Destrehan, Louisiana.
- (3) Also applies from St. Louis, Missouri, East St. Louis, and Alton, Illinois.

Water rates were made on the basis of 4 mills per ton-mile, i.e., 3.5 mills for round trip towing service plus 0.5 mills per ton-mile for barge hire.

Tariff Authorities: Roy Pope's Petroleum Tariff No. 16-X, I.C.C. 195.
R. A. Sperry's Petroleum Tariff No. 51-B, I.C.C. 326.
J. R. Peel's Petroleum Tariff No. 123-G, I.C.C. 2791.

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			Tennessee	Chattanooga, Tennessee	Etowah, Tennessee	Dayton, Tennessee	Dalton, Georgia	
Houston, Texas	(1)	AR	1240	1220	1240	1220	1160	
		WT	<u>815</u>	<u>761</u>	<u>821</u>	<u>777</u>	<u>759</u>	
			425	459	419	443	401	
Baton Rouge, and New Orleans, Louisiana	(2)	AR	940	940	960	940	860	
		WT	<u>706</u>	<u>652</u>	<u>712</u>	<u>668</u>	<u>650</u>	
			234	288	243	272	210	
Wood River, Illinois	(3)	AR	960	940	960	960	960	
		WT	<u>393</u>	<u>339</u>	<u>399</u>	<u>355</u>	<u>337</u>	
			567	601	561	605	623	
Louisville, Kentucky		AR	300	820	800	740	820	
		WT	<u>432</u>	<u>378</u>	<u>438</u>	<u>394</u>	<u>376</u>	
			368	442	362	346	444	
Cincinnati, Ohio		AR	800	840	820	760	840	
		WT	<u>485</u>	<u>431</u>	<u>491</u>	<u>447</u>	<u>429</u>	
			315	409	329	313	411	
Shreveport, Louisiana		AR	1060	1060	1100	1060	1000	Total
		WT	<u>747</u>	<u>693</u>	<u>753</u>	<u>709</u>	<u>691</u>	Average
			313	367	347	351	309	Saving
Average Saving			\$3.70	\$4.28	\$3.78	\$3.88	\$4.00	\$3.93

AR - All-Rail

WT - Water-Truck

(1) Also applies from Beaumont, Galveston, Texas City, and Port Arthur, Texas; Lake Charles, Louisiana.

(2) Also applies from Gretna, Norco, and Destrehan, Louisiana.

(3) Also applies from St. Louis, Missouri, East St. Louis, and Alton, Illinois.

Water-Truck rates constructed as follows:

Water movement to river terminal - 4 mills per ton-mile.

Truck movement beyond - 2 cents per ton-mile.

Highway miles from Chattanooga: Athens - 57, Cleveland - 30, Etowah - 60,
Dayton - 38, Dalton - 29.

Authorities: Roy Pope's Petroleum Tariff No. 16-X, I.C.C. 195.

R. A. Sperry's Petroleum Tariff No. 51-B, I.C.C. 326.

J. R. Peel's Petroleum Tariff No. 123-G, I.C.C. 2791.

DEFENDANTS' EXHIBIT NO. 131

COMPARATIVE RATES ON GASOLINE AND KEROSENE BY RAIL AND BY WATER

Rates in cents per ton of 2,000 pounds

From:	To:	Chattanooga, Tennessee	Florence, Alabama	Decatur, Alabama	Knoxville, Tennessee	Guntersville, Alabama
Houston, (1)	R	1160	910	950	1260	1120
Texas	W	701	617	679	775	660
		<u>459</u>	<u>293</u>	<u>271</u>	<u>485</u>	<u>460</u>
Baton Rouge, (2)	R	860	760	670	1000	690
New Orleans,	W	592	509	529	667	551
Louisiana		<u>268</u>	<u>251</u>	<u>141</u>	<u>333</u>	<u>441</u>
Wood River, (3)	R	920	860	880	960	960
Illinois	W	279	197	216	353	239
		<u>641</u>	<u>663</u>	<u>664</u>	<u>607</u>	<u>721</u>
Louisville,	R	780	780	780	740	840
Kentucky	W	318	235	255	391	276
		<u>462</u>	<u>545</u>	<u>525</u>	<u>349</u>	<u>564</u>
Cincinnati,	R	800	880	860	760	880
Ohio	W	371	288	308	444	329
		<u>429</u>	<u>592</u>	<u>552</u>	<u>316</u>	<u>551</u>
Shreveport,	R	1000	780	820	1100	960
Louisiana	W	633	552	611	708	593
		<u>367</u>	<u>228</u>	<u>209</u>	<u>392</u>	<u>367</u>
Average Savings		\$4.38	\$4.29	\$3.94	\$4.14	\$5.17

R: All-Rail

W: All-Water

(1) Also applies from Beaumont, Galveston, Texas City, and Port Arthur, Texas;
Lake Charles, Louisiana.

(2) Also applies from Gretna, Norco, and Destrehan, Louisiana.

(3) Also applies from

From:	To:	Chattanooga, Tennessee	Florence, Alabama	Decatur, Alabama	Knoxville, Tennessee	Guntersville, Alabama
Houston, (1) Texas	R W	1180 701 <u>459</u>	910 617 <u>293</u>	950 679 <u>271</u>	1260 775 <u>485</u>	1120 660 <u>460</u>
Baton Rouge, (2) New Orleans, Louisiana	R W	860 592 <u>268</u>	760 509 <u>251</u>	670 529 <u>141</u>	1000 667 <u>333</u>	690 551 <u>441</u>
Wood River, (3) Illinois	R W	920 279 <u>641</u>	860 197 <u>663</u>	880 216 <u>664</u>	960 353 <u>607</u>	960 239 <u>721</u>
Louisville, Kentucky	R W	780 318 <u>462</u>	780 235 <u>545</u>	780 255 <u>525</u>	740 391 <u>349</u>	840 276 <u>564</u>
Cincinnati, Ohio	R W	800 371 <u>429</u>	880 288 <u>592</u>	860 308 <u>552</u>	760 444 <u>316</u>	880 329 <u>551</u>
Shreveport, Louisiana	R W	1000 633 <u>367</u>	780 552 <u>228</u>	820 611 <u>209</u>	1100 708 <u>392</u>	960 593 <u>367</u>
Average Savings		\$4.38	\$4.29	\$3.94	\$4.14	\$5.17

R: All-Rail

W: All-Water

- (1) Also applies from Beaumont, Galveston, Texas City, and Port Arthur, Texas; Lake Charles, Louisiana.
- (2) Also applies from Gretna, Norco, and Destrehan, Louisiana.
- (3) Also applies from St. Louis, Missouri, East St. Louis, and Alton, Illinois.

Water rates were made on the basis of 4 mills per ton-mile, i.e., 3.5 mills for round trip towing service plus 0.5 mills per ton-mile for barge hire.

Tariff Authorities: Roy Pope's Petroleum Tariff No. 16-X, I.C.C. 195.
R. A. Sperry's Petroleum Tariff No. 51-B, I.C.C. 326.
J. R. Peel's Petroleum Tariff No. 123-G, I.C.C. 2791.

DEFENDANTS' EXHIBIT NO. 131

COMPARATIVE RATES ON GASOLINE AND KEROSENE BY RAIL AND BY WATER-TRUCK

Rates in cents per ton of 2,000 pounds

To:		Representative Bulk-Stations Which Can Be Served From Knoxville River Terminal, Viz:					
From:		Lorristown, Tennessee	Newport, Tennessee	Clinton, Tennessee	Sevierville, Tennessee	Maryville, Tennessee	Lenoir City, Tennessee
Houston, Texas (1)	AR	1280	1320	1280	1440	1280	1260
	WT	857	853	813	829	807	827
		<u>423</u>	<u>456</u>	<u>467</u>	<u>611</u>	<u>473</u>	<u>433</u>
Baton Rouge, and New Orleans, Louisiana (2)	AR	1040	1080	1000	1120	1000	980
	WT	749	755	705	721	699	719
		<u>291</u>	<u>325</u>	<u>295</u>	<u>399</u>	<u>301</u>	<u>261</u>
Woodriver, Illinois (3)	AR	1000	1020	960	1120	980	980
	WT	435	441	391	407	385	405
		<u>565</u>	<u>579</u>	<u>569</u>	<u>713</u>	<u>595</u>	<u>575</u>
Louisville, Kentucky	AR	780	800	720	880	760	760
	WT	473	479	429	445	423	443
		<u>307</u>	<u>321</u>	<u>291</u>	<u>435</u>	<u>337</u>	<u>317</u>
Cincinnati, Ohio	AR	800	820	740	900	760	780
	WT	526	532	482	498	476	496
		<u>274</u>	<u>288</u>	<u>258</u>	<u>402</u>	<u>284</u>	<u>284</u>
Shreveport, Louisiana	AR	1140	1180	1120	1280	1120	1100
	WT	790	796	746	762	740	760
		<u>350</u>	<u>384</u>	<u>374</u>	<u>518</u>	<u>380</u>	<u>340</u>
Average Saving		\$3.68	\$3.92	\$3.76	\$5.13	\$3.95	\$3.68
							\$4.02

AR - All-Rail
WT - Water-Truck

(1) Also applies from Beaumont, Galveston, Texas City, and Port Arthur, Texas; Lake Charles, Louisiana.

(2) Also applies from Gretna, Norco, and Destrehan, Louisiana.

(3) Also applies from St. Louis, Missouri, East St. Louis, and Alton, Illinois.

Water-Truck rates constructed as follows:

Water movement to river terminal - 4 mills per ton-mile.

Truck movement beyond - 2 cents per ton-mile.

Highway miles from Knoxville. Maryville 42

DEFENDANTS' EXHIBIT NO. 131

COMPARATIVE RATES ON GASOLINE AND KEROSENE BY RAIL AND BY WATER-TRUCK

Rates in cents per ton of 2,000 pounds

To:		Representative Bulk-Stations Which Can Be Served From Chattanooga River Terminal, Viz:					
From:		Athens, Tennessee	Cleveland, Tennessee	Etowah, Tennessee	Dayton, Tennessee	Dalton, Georgia	
Houston, Texas (1)	AR	1240	1220	1240	1220	1160	
	WT	<u>815</u>	<u>761</u>	<u>821</u>	<u>777</u>	<u>759</u>	
		425	459	419	443	401	
Baton Rouge, and New Orleans, Louisiana (2)	AR	940	940	960	940	860	
	WT	<u>706</u>	<u>652</u>	<u>712</u>	<u>668</u>	<u>650</u>	
		234	288	248	272	210	
Wood River, Illinois (3)	AR	960	940	960	960	960	
	WT	<u>393</u>	<u>339</u>	<u>399</u>	<u>355</u>	<u>337</u>	
		567	601	561	605	623	
Louisville, Kentucky	AR	300	220	300	740	820	
	WT	<u>432</u>	<u>378</u>	<u>438</u>	<u>394</u>	<u>376</u>	
		368	442	362	346	444	
Cincinnati, Ohio	AR	800	840	820	760	840	
	WT	<u>485</u>	<u>431</u>	<u>491</u>	<u>447</u>	<u>429</u>	
		315	409	329	313	411	
Shreveport, Louisiana	AR	1060	1060	1100	1060	1000	Total
	WT	<u>747</u>	<u>693</u>	<u>753</u>	<u>709</u>	<u>691</u>	Average
		313	367	347	351	309	Saving
Average Saving		\$3.70	\$4.28	\$3.78	\$3.88	\$4.00	\$3.93

AR - All-Rail

WT - Water-Truck

(1) Also applies from Beaumont, Galveston, Texas City, and Port Arthur, Texas;
Lake Charles, Louisiana.

(2) Also applies from Gretna, Norco, and Destrehan, Louisiana.

(3) Also applies from St. Louis, Missouri, East St. Louis, and Alton, Illinois.

Water-Truck rates constructed as follows:

Water transport to river terminal - 4 mills per ton-mile.

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DEFENDANTS' EXHIBIT NO. 131

COMPARATIVE RATES ON GASOLINE AND KEROSENE BY RAIL AND BY WATER-TRUCK

Rates in cents per ton of 2,000 pounds

To:		Representative Bulk-Stations Which Can Be Served From Guntersville River Terminal, Vis:				
From:		Gadsden, Alabama	Scottsboro, Alabama	Fort Payne, Alabama	Boaz, Alabama	
Houston, Texas (1)	AR	1100	1160	1120	1100	
	WT	728	714	764	688	
		<u>372</u>	<u>446</u>	<u>356</u>	<u>412</u>	
Baton Rouge, and New Orleans, (2) Louisiana	AR	660	860	630	840	
	WT	481	605	517	579	
		<u>79</u>	<u>255</u>	<u>113</u>	<u>261</u>	
Wood River, Illinois (3)	AR	960	900	960	960	
	WT	307	293	343	267	
		<u>653</u>	<u>607</u>	<u>617</u>	<u>693</u>	
Louisville, Kentucky	AR	860	780	840	840	
	WT	344	330	380	304	
		<u>516</u>	<u>450</u>	<u>460</u>	<u>536</u>	
Cincinnati, Ohio	AR	880	840	840	880	
	WT	397	383	433	357	
		<u>483</u>	<u>457</u>	<u>407</u>	<u>523</u>	
Shreveport, Louisiana	AR	940	960	960	940	Total
	WT	435	421	471	395	Average
		<u>505</u>	<u>539</u>	<u>489</u>	<u>546</u>	Saving
Average Saving		\$4.35	\$4.59	\$4.07	\$4.95	\$4.49

AR - All-Rail
WT - Water-Truck

(1) Also applies from Beaumont, Galveston, Texas City, and Port Arthur, Texas;
Lake Charles, Louisiana.

(2) Also applies from Baton Rouge, Louisiana, and New Orleans, Louisiana.

From:			Alabama	Alabama	Alabama	Alabama	
Houston, Texas (1)	AR		1100	1160	1120	1100	
	WT		<u>728</u>	<u>714</u>	<u>764</u>	<u>688</u>	
			472	446	356	412	
Baton Rouge, and New Orleans, (2) Louisiana	AR		560	860	630	840	
	WT		<u>481</u>	<u>605</u>	<u>517</u>	<u>579</u>	
			79	255	113	261	
Wood River, Illinois (3)	AR		960	900	960	960	
	WT		<u>307</u>	<u>293</u>	<u>343</u>	<u>267</u>	
			653	607	617	693	
Louisville, Kentucky	AR		880	780	840	840	
	WT		<u>344</u>	<u>330</u>	<u>380</u>	<u>304</u>	
			516	450	460	536	
Cincinnati, Ohio	AR		880	840	840	880	
	WT		<u>397</u>	<u>383</u>	<u>433</u>	<u>357</u>	
			483	457	407	523	
Shreveport, Louisiana	AR		940	960	960	940	Total
	WT		<u>435</u>	<u>421</u>	<u>471</u>	<u>395</u>	Average
			505	539	489	545	Saving
Average Saving			\$4.35	\$4.59	\$4.07	\$4.95	\$4.49

AR - All-Rail

WT - Water-Truck

(1) Also applies from Beaumont, Galveston, Texas City, and Port Arthur, Texas;
Lake Charles, Louisiana.

(2) Also applies from Gretna, Norco, and Destrehan, Louisiana.

(3) Also applies from St. Louis, Missouri, East St. Louis, and Alton, Illinois.

Water-Truck rates constructed as follows:

Water movement to river terminal - *4 mills per ton-mile.

Truck movement beyond - 2 cents per ton-mile.

*Except from New Orleans-Baton Rouge Group to Gadsden and Fort Payne, 3 mills per ton-mile.

Highway miles from Guntersville: Gadsden - 34, Scottsboro - 27, Fort Payne - 52,
Boaz - 14.

Authorities: Roy Pope's Petroleum Tariff No. 16-X, I.C.C. 195.
R. A. Sperry's Petroleum Tariff No. 51-B, I.C.C. 326.
J. R. Peel's Petroleum Tariff No. 123-G, I.C.C. 2791.

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From:		Athens, Alabama	Hartselle, Alabama	Cullman, Alabama	Huntsville, Alabama	
Houston, Texas (1)	AR	950	1040	1040	950	
	WT	709	703	741	729	
		<u>241</u>	<u>337</u>	<u>299</u>	<u>221</u>	
Baton Rouge, and New Orleans, Louisiana (2)	AR	820	650	530	840	
	WT	559	553	458	579	
		<u>261</u>	<u>97</u>	<u>72</u>	<u>261</u>	
Wood River, Illinois (3)	AR	900	900	900	900	
	WT	246	240	278	266	
		<u>654</u>	<u>680</u>	<u>622</u>	<u>634</u>	
Louisville, Kentucky	AR	760	780	800	780	
	WT	295	279	317	305	
		<u>475</u>	<u>501</u>	<u>483</u>	<u>475</u>	
Cincinnati, Ohio	AR	860	880	880	880	
	WT	338	332	370	358	
		<u>522</u>	<u>548</u>	<u>510</u>	<u>522</u>	
Shreveport, Louisiana	AR	880	880	880	880	Total
	WT	641	635	673	661	Average
		<u>239</u>	<u>245</u>	<u>207</u>	<u>219</u>	Saving
Average Saving		\$3.99	\$3.98	\$3.66	\$3.89	\$3.88

AR - All-Rail

WT - Water-Truck

(1) Also applies from Beaumont, Galveston, Texas City, and Port Arthur, Texas; Lake Charles, Louisiana.

(2) Also applies from Gretna, Norco, and Destrehan, Louisiana.

(3) Also applies from St. Louis, Missouri, East St. Louis, and Alton, Illinois.

Water-Truck rates constructed as follows:

Water movement to river terminal - 4 mills per ton-mile.

Truck movement beyond - 2 cents per ton-mile.

* Except from New Orleans-Baton Rouge Group to Cullman, 3 mills per ton-mile.

Highway miles from Decatur: Athens - 15, Hartselle - 12, Cullman - 31, Huntsville -

Authorities: Roy Pope's Petroleum Tariff No. 16-X, I.C.C. 195.

R. A. Sperry's Petroleum Tariff No. 51-B, I.C.C. 326.

J. R. Peel's Petroleum Tariff No. 123-G, I.C.C. 2791.

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gasoline will be consumed annually. The total domestic demand for all gasoline and kerosene, tax paid as well as non-taxable, is about 114% of the tax-paid gasoline consumed in the U.S.^{3/} The consumption of all gasoline and kerosene in the Tennessee Valley area may thus be considered to approximate 745,000 tons a year on above basis.

The estimate that 505,000 tons of gasoline and kerosene will move into the Tennessee Valley by water is a reasonable one when it is considered that approximately 745,000 tons of gasoline and kerosene is necessary to satisfy the needs of the Valley in a year, at the present automobile registration. Also, the figure is reasonable when the 1937 tonnage of gasoline and kerosene that moves on the Cumberland River is considered, approximately 266,000 tons. (This is an indicated figure based on the first eight months of 1937^{4/}) The improved portion of the Cumberland is only about one-third the length of the Tennessee River.

There are possibilities that much more gasoline would move into the Tennessee Valley by water if pipe lines such as one from Chattanooga to Atlanta were constructed. Further increase in the amount of petroleum products distributed may arise from distribution when terminals on the Tennessee River serve a much wider area than is now foreseen. Much of the gasoline moving to Tennessee River terminals might compete with such products moving in from Atlantic Coast ports at the present time.

1/ Domestic Commerce, August 1935, p. 114; World's Almanac, 1937, p. 321.

2/ Market Data Handbook, 1936.

3/ Minerals Yearbook, 1937, pp. 1024, 1038.

4/ Letter of October 7, 1937, from Lieutenant Colonel C. E. Perry, District Engineer, Nashville, Tennessee.

DEFENDANTS' EXHIBIT NO. 131

COMPARATIVE RATES ON GASOLINE AND KEROSENE, BY RAIL AND BY WATER-TRUCK

Rates in cents per ton of 2,000 pounds

To:		Representative Bulk-Stations Which Can Be Served From Decatur River Terminal, Viz:				
From:		Athens, Alabama	Hartselle, Alabama	Cullman, Alabama	Huntsville, Alabama	
Houston, Texas (1)	AR	950	1040	1040	950	
	WT	709	703	741	729	
		<u>241</u>	<u>337</u>	<u>299</u>	<u>221</u>	
Baton Rouge, and New Orleans, Louisiana (2)	AR	820	650	530	840	
	WT	559	553	458	579	
		<u>261</u>	<u>97</u>	<u>72</u>	<u>261</u>	
Wood River, Illinois (3)	AR	900	900	900	900	
	WT	246	240	278	266	
		<u>654</u>	<u>660</u>	<u>622</u>	<u>634</u>	
Louisville, Kentucky	AR	760	780	800	780	
	WT	295	279	317	305	
		<u>475</u>	<u>501</u>	<u>483</u>	<u>475</u>	
Cincinnati, Ohio	AR	860	880	880	880	
	WT	338	332	370	358	
		<u>522</u>	<u>548</u>	<u>510</u>	<u>522</u>	
Shreveport, Louisiana	AR	880	880	880	880	Total
	WT	641	635	673	661	Average
		<u>239</u>	<u>245</u>	<u>207</u>	<u>219</u>	Saving
Average Saving		\$3.99	\$3.98	\$3.66	\$3.89	\$3.88

AR - All-Rail
WT - Water-Truck

(1) Also applies from Beaumont, Galveston, Texas City, and Port Arthur, Texas;
Lake Charles, Louisiana.

(2) Also applies from Gretna, Norco, and Destrehan, Louisiana.

DEFENDANTS' EXHIBIT NO. 131

COMPARATIVE RATES ON GASOLINE AND KEROSENE BY RAIL AND BY WATER-TRUCK

Rates in cents per ton of 2,000 pounds

From:	To: Representative Bulk-Stations Which Can Be Served From Florence River Terminal, Viz:					
	Cherokee, Alabama	Courtland, Alabama	Russellville, Alabama	Sheffield, Alabama	Tusculumbia, Alabama	
Houston, Texas (1)	AR 910	950	950	910	910	
	WT 661	675	669	625	629	
	249	275	281	285	281	
Baton Rouge, and New Orleans, Louisiana (2)	AR 760	730	760	760	760	
	WT 553	567	561	517	521	
	207	163	199	243	239	
Wood River, Illinois (3)	AR 840	860	860	860	860	
	WT 241	255	249	205	209	
	599	605	611	655	651	
Louisville, Kentucky	AR 800	800	800	780	780	
	WT 279	293	287	243	247	
	521	507	513	537	533	
Cincinnati, Ohio	AR 880	880	880	880	880	
	WT 332	346	349	296	300	
	543	534	531	584	580	
Shreveport, Louisiana	AR 780	820	820	780	780	Total
	WT 596	610	604	560	564	Average
	184	210	216	220	216	Saving
Average Saving	\$3.85	\$3.82	\$3.92	\$4.21	\$4.17	\$3.99

AR - All-Rail

WT - Water-Truck

(1) Also applies from Beaumont, Galveston, Texas City, and Port Arthur, Texas;
Lake Charles, Louisiana.

(2) Also applies from Gretna, Norco, and Destrehan, Louisiana.

(3) Also applies from St. Louis, Missouri, East St. Louis, and Alton, Illinois.

Water-Truck rates constructed as follows:

Water transport to river terminal

				Alabama	Alabama	
Houston, Texas (1)	AR 910 WT 661 <u>249</u>	950 675 <u>275</u>	950 689 <u>281</u>	910 625 <u>285</u>	910 629 <u>281</u>	
Baton Rouge, and New Orleans, Louisiana (2)	AR 760 WT 553 <u>207</u>	730 567 <u>163</u>	760 561 <u>199</u>	760 517 <u>243</u>	760 521 <u>239</u>	
Wood River, Illinois (3)	AR 840 WT 241 <u>599</u>	860 255 <u>605</u>	860 249 <u>611</u>	860 205 <u>655</u>	860 209 <u>651</u>	
Louisville, Kentucky	AR 800 WT 279 <u>521</u>	800 293 <u>507</u>	800 287 <u>513</u>	780 243 <u>537</u>	780 247 <u>533</u>	
Cincinnati, Ohio	AR 880 WT 332 <u>543</u>	880 346 <u>534</u>	880 349 <u>531</u>	880 296 <u>584</u>	880 300 <u>580</u>	
Shreveport, Louisiana	AR 780 WT 596 <u>184</u>	820 610 <u>210</u>	820 604 <u>216</u>	780 560 <u>220</u>	780 564 <u>216</u>	Total Average Saving
Average Saving	\$3.85	\$3.82	\$3.92	\$4.21	\$4.17	\$3.99

AR - All-Rail
WT - Water-Truck

- (1) Also applies from Deaumont, Galveston, Texas City, and Port Arthur, Texas;
Lake Charles, Louisiana.
(2) Also applies from Gretna, Norco, and Destrehan, Louisiana.
(3) Also applies from St. Louis, Missouri, East St. Louis, and Alton, Illinois.

Water-Truck rates constructed as follows:

Water movement to river terminal - 4 mills per ton-mile.
Truck movement beyond - 2 cents per ton-mile.

Highway miles from Florence: Cherokee - 22, Courtland - 29, Russellville - 26,
Sheffield - 4, Tuscumbia - 6.

Authorities: Roy Pope's Petroleum Tariff No. 16-X, I.C.C. 195.
R. A. Sperry's Petroleum Tariff No. 51-B, I.C.C. 326.
J. R. Peel's Petroleum Tariff No. 123-G, I.C.C. 2791.

DEFENDANTS' EXHIBIT NO. 131

GASOLINE AND KEROSENE

Basic Information

Tax paid gasoline used per automobile is 660 gallons a year,^{1/} average for the Tennessee Valley states. Automobile registrations for the Tennessee Valley area were approximately 265,000 in 1934,^{2/} plus 15%, the amount of increase in the seven southeastern states in automobile registrations since 1934. Thus there are about 300,000 automobiles for which 650,000 tons of tax paid gasoline will be consumed annually. The total domestic demand for all gasoline and kerosene, tax paid as well as non-taxable, is about 114% of the tax-paid gasoline consumed in the U.S.^{3/} The consumption of all gasoline and kerosene in the Tennessee Valley area may thus be considered to approximate 745,000 tons a year on above basis.

The estimate that 505,000 tons of gasoline and kerosene will move into the Tennessee Valley by water is a reasonable one when it is considered that approximately 745,000 tons of gasoline and kerosene is necessary to satisfy the needs of the Valley in a year, at the present automobile registration. Also, the figure is reasonable when the 1937 tonnage of gasoline and kerosene that moves on the Cumberland River is considered, approximately 266,000 tons. (This is an indicated figure based on the first eight months of 1937.^{4/}) The improved portion of the Cumberland is only about one-third the length of the Tennessee River.

There are possibilities that much more gasoline would move into the Tennessee Valley by water if pipe lines such as one from Chattanooga to Atlanta were constructed. Further increase in the amount of petroleum products distributed may arise from distribution when terminals on the Tennessee River serve a much wider area than is now foreseen. Much of the gasoline moving to Tennessee River terminals might compete with such products moving in from Atlantic Coast ports at the present time.

DEFENDANTS' EXHIBIT NO. 131

GASOLINE AND KEROSENE

Knorrville, Tennessee

(Inbound)

Origin of Own
Tonnage

Cherokee Oil Co. (C. S. Reeder, Jr.)	Gasoline & Kerosene	150,000 tons	(Smiths Bluff, Tex. (Baton Rouge, La. (St. Louis, Mo.
---	---------------------	--------------	---

Chattanooga, Tennessee

(Inbound)

Pure Oil Company (H. L. Thatcher)	Gasoline & Kerosene	130,000 tons	(Smiths Bluff, Tex. (Baton Rouge, La. (St. Louis, Mo.
--------------------------------------	---------------------	--------------	---

Texas Company (L. T. Mathis & G. L. Kelly)	Gasoline & Kerosene	120,000 tons	(Lawrence, Ill. (Houston, Tex.
--	---------------------	--------------	-----------------------------------

Shell Petroleum Corp. (S. H. Campbell, Jr.)	Gasoline & Kerosene	130,000 tons	(Norco, La. (Shreveport, La.
--	---------------------	--------------	---------------------------------

Guntersville, Alabama

(Inbound)

Gulf Refining Company (R. E. Catlett & R. E. Russell)	Gasoline & Kerosene	50,000 tons	(Cincinnati, O. (Louisville, Ky. (Port Arthur, Tex. (St. Louis, Mo.
---	---------------------	-------------	--

Decatur, Alabama

(Inbound)

Gulf Refining Company	Gasoline & Kerosene	75,000 tons	(Cincinnati, O.
-----------------------	---------------------	-------------	-----------------

Cherokee Oil Co. (C. S. Reeder, Jr.)	Gasoline & Kerosene	150,000 tons	(Smiths Bluff, Tex. (Baton Rouge, La. (St. Louis, Mo.
---	---------------------	--------------	---

Chattanooga, Tennessee

(Inbound)

Pure Oil Company (H. L. Thatcher)	Gasoline & Kerosene	130,000 tons	(Smiths Bluff, Tex. (Baton Rouge, La. (St. Louis, Mo.
--------------------------------------	---------------------	--------------	---

Texas Company (L. T. Mathis & G. L. Kelly)	Gasoline & Kerosene	120,000 tons	(Lawrence, Ill. (Houston, Tex.
--	---------------------	--------------	-----------------------------------

Shell Petroleum Corp. (S. H. Campbell, Jr.)	Gasoline & Kerosene	130,000 tons	(Norco, La. (Shreveport, La.
--	---------------------	--------------	---------------------------------

Guntersville, Alabama

(Inbound)

Gulf Refining Company (R. E. Catlett & R. E. Russell)	Gasoline & Kerosene	50,000 tons	(Cincinnati, O. (Louisville, Ky. (Port Arthur, Tex. (St. Louis, Mo.
---	---------------------	-------------	--

Decatur, Alabama

(Inbound)

Gulf Refining Company (R. E. Catlett & R. E. Russell)	Gasoline & Kerosene	75,000 tons	(Cincinnati, O. (Louisville, Ky. (Port Arthur, Tex. (St. Louis, Mo.
---	---------------------	-------------	--

DEFENDANTS' EXHIBIT NO. 131

GASOLINE AND KEROSENE

Florence, Sheffield, Tuscumbia, Alabama

(Inbound)

Standard Oil Company (J. B. Gilbert)	Gasoline & Kerosene	100,000 tons	Baton Rouge, La.
---	---------------------	--------------	------------------

Note: The above tonnage figures include gasoline and kerosene necessary to supply the bulk stations in the marketing areas around the Tennessee River terminals.

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[fol. 4230] DEFENDANTS' EXHIBIT No. 132

Tonnage Graph on Tennessee River—calendar year 1936.

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 133

Power Requirements of Four Groups of Utility Companies

Table 1939 and 1943

	Energy Requirements		Delivery of Firm Energy		Machine Shortage Incl. Reserves		Overall	
	1939 (Kwh.)	1943 (Kwh.)	1939 (Kw.)	1943 (Kw.)	1939 (Kw.)	1943 (Kw.)	1939 (Kw.)	1943 (Kw.)
Purchase								
Operating Companies								
Commonwealth & Southern Group.....	564,300,000	1,600,800,000	261,700	519,000	207,000	559,100	261,700	559,100
Alabama Power Company								
Birmingham Electric Company								
Gulf Power Company								
Mississippi Power Company								
South Carolina Power Company								
Tennessee Electric Power Co.								
Southern Tennessee Power Co.								
Georgia Power Company								
Electric Pwr. & Lt.—National Pwr. & Lt. Group (Electric Bond and Share)	132,700,000	426,100,000	90,600	177,000	88,200	190,000	90,600	190,000
Arkansas Power & Light Company								
Louisiana Power & Light Company								
Memphis Power & Light Company								
Mississippi Power & Light Company								
West Tennessee Power & Light Company								
National Power & Light Group.....	73,000,000	140,300,000	28,000	45,400	0	16,000	28,000	45,400
Carolina Power & Light, Western Division								
Tennessee Public Service Company								
Kentucky Utilities Group.....	0	2,300,000		4,000	15,000	22,400	15,000	22,400
Kentucky Utilities, Pineville District								
Old Dominion Power Company								
Duke Power & Light Company								
Total All Listed Companies	770,000,000	2,130,000,000	300,000	740,000	212,000	797,000	300,000	797,000

Total All Listed Companies

DEFENDANTS' EXHIBIT No. 134

[fol. 4232]

Details of Computations

Study of Load Forecast and Power Requirements of Four Groups
of Utility Companies

[fol. 4233]

Commonwealth and Southern Southeastern Group

Table A

Capacity Summary Sheet

	1936 1,000 kw	1939 1,000 kw	1943 1,000 kw
Maximum annual demand	896.0	1,120.0	1,433.0
Demand increased by 7½% margin to give maximum contemplated requirement		1,204.0	1,540.5
Capacity fuel plants	398.7		
Capacity present hydro plants having pondage	698.8		
Total available system capacity representa- tive dry year	1,097.5	1,097.5	1,097.5
Apparatus reserves required			
Machine reserves:			
Largest unit down		67.0	67.0
Other units down		33.5	33.5
Transmission and miscellaneous, 5%		56.0	71.6
Total apparatus reserves		156.5	172.1
Capacity remaining beyond reserves to meet maximum contemplated requirement		941.0	925.4
Capacity to be obtained elsewhere		263.0	615.1
Capacity from contracts:			
Present firm contracts		4.5	4.5
Customer plants, for reserve only		51.5	51.5
Balance to be purchased		207.0	559.1
Capacity required only for reserve			40.1
Notes:			
Firm capacity necessary to supply firm energy to be purchased		261.7	519.0
Total reserves above forecast demand, all sorts		240.5	279.6
These reserves as a percent of total available capacity, including purchases		20.7%	18.7%

DEFENDANTS' EXHIBIT No. 134

[fol. 4234]

Sheet 2

Commonwealth and Southern Southeastern Group

Table B

Energy Summary Sheet

	1936 1,000,000 k.w.h	1939 1,000,000 k.w.h	1943 1,000,000 k.w.h
Annual energy required.....	4,632.0*	5,740.0	7,406.0
Obtainable from system fuel plants.....		2,382.1	2,839.0
Obtainable from system hydro plants (in 1931, taken as a representative dry year).....	2,676.5	2,791.7†	2,964.0
Energy to be obtained elsewhere.....		565.9	1,602.0
Energy obtainable from contracts (same as 1936).....		1.6	1.6
Balance to be purchased.....		564.3	1,600.4

* Reported by companies.

† Larger than 1936 value because of larger load available to absorb energy

[fol. 4235]

Sheet 3

Commonwealth and Southern Southeastern Group

Table C

Forecast—Demand and Energy

Year	Annual Rate Increase Assumed	Sum of the Several System Demands 1,000 kw	Saving Through Diversity	Diversified Demand or "Peak" 1,000 kw	Load Factor	Energy Require- ments 1,000,000 kwh
1934	.....	750.0*	5.3%	712.0	55.7%	3,477.0
1935	10.0%	825.0*	5.3%	783.0	56.5%	3,873.0
1936	14.8%	947.0*	5.7%	896.0*	58.9%	4,632.0
1937	9.8%	1,040.0	5.3%	988.0	59.0%	5,106.0
1938	8.0%	1,123.0	5.3%	1,066.0	58.8%	5,491.0
1939	5.0%	1,179.0	5.3%	1,120.0	58.5%	5,740.0
1940	7.5%	1,267.0	5.3%	1,203.0	59.0%	6,235.0
1941	7.0%	1,356.0	5.3%	1,288.0	59.0%	6,657.0
1942	3.0%	1,397.0	5.3%	1,327.0	58.3%	6,777.0
1943	8.0%	1,509.0	5.3%	1,433.0	59.0%	7,406.0

Average of the annual rates of increase, year by year, 1938-1943, 6.4%

* Reported by companies.

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DEFENDANTS' EXHIBIT No. 134

Sheet 4

Commonwealth and Southern Southeastern Group—Continued

Table D

Analysis of Demand and Energy Forecasts by Months

	January	February	March	April	May	June	July	August	September	October	November	December	Year
	1936												
Percentage monthly breakdown of annual energy.....	7.94	7.06	7.72	7.78	7.98	8.02	8.64	8.73	9.95	9.09	8.78	9.31	100.00
Percentage of monthly energy under Saturday and Sunday plus holiday typical load curves.....	21.0	19.3	19.3	19.5	20.5	21.1	22.5	21.0	22.0	19.5	22.5	22.1	.....
Average Number of week-days in month, all years.....	21.14	20.00	22.14	21.42	22.14	21.42	21.14	22.14	20.42	22.14	20.42	21.14	.....
Average number of Saturdays in month, all years.....	4.43	4.00	4.43	4.29	4.43	4.29	4.43	4.43	4.29	4.43	4.29	4.43	.....
Average number of Sundays and holidays in month—all years.....	5.43	4.00	4.43	4.29	4.43	4.29	5.43	4.43	5.29	4.43	5.29	5.43	.....
	1939												
Monthly breakdown of energy forecast, 1936 breakdown—1,000,000 kwh.....	455.8	405.2	443.1	446.6	458.1	460.3	495.9	501.1	513.7	521.8	504.0	534.4	5,740.0
Daily energy under typical week-day load curve—1,000,000 kwh.....	17.0	16.3	16.1	16.8	16.5	17.0	18.2	17.9	19.6	19.0	19.1	19.7	.....
Typical peaks for forecast requirements, load factor 76.5%—1,000 kw.....	928.5	891.4	880.5	914.9	896.9	924.7	991.2	974.9	1,069.7	1,034.3	1,043.0	1,073.6	.....
	1943												
Monthly breakdown of energy forecast, 1936 breakdown—1,000,000 kwh.....	588.0	522.9	571.7	576.2	591.0	594.0	639.9	646.5	662.8	673.2	650.3	689.5	7,406.0
Daily energy under typical week-day load curve—1,000,000 kwh.....	22.0	21.1	20.8	21.6	21.3	21.9	23.5	23.1	25.3	24.5	24.7	25.4	.....
Typical peaks for forecast requirements, load factor 76.5%—1,000 kw.....	1,197.9	1,150.4	1,136.3	1,180.4	1,158.6	1,192.9	1,279.1	1,257.8	1,379.4	1,334.7	1,345.6	1,385.4	.....

1943
1,000,000
k.w.h.
7,406.0
2,839.1

(fol. 4236)

2,964.6†
1,602.4

1.6
1,600.8

b energy.

Energy
Require-
ments
1,000,000
kwh
3,477.0*
3,873.0*
4,632.0*
5,106.0
5,491.0
5,740.0
6,235.0
6,657.0
6,777.0
7,406.0
6.4%

DEFENDANTS' EXHIBIT No. 134

[fol. 4237]

Sheet 5

Commonwealth and Southern

Southeastern Group

Table E

Power Assignments Under the Typical Load Curve for the Maximum
Month November

	1939	1943
Useable fuel capacity—85% of plants capability—1,000 kw	326.0	326.0
Useable fuel capacity as a percent of typical monthly peak..	31.3%	24.2
Dry year hydro energy available—1,000,000 kwh.....	118.4	118.4
Percent of typical monthly peak supportable by system hydro energy, placed at top of load curve.....	43.7%	37.2
Balance of typical peak requiring new capacity—1,000 kw	261.7	519.0
Energy necessary to support this new capacity under the typical weekly load curve—1,000,000 kwh.....	151.9	297.2

4154

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4154A

[fol. 4238]

DEFENDANTS' EXHIBIT No. 134

Sheet 6

Commonwealth and Southern

Southeastern Group

Table F

Hydro and Steam Generation

	January	February	March	April	May	June	July	August	September	October	November	December	Year
Hydro plants generation in representative Dry year—1931—1,000,000 kwh:													
Alabama Power.....	129.3	141.1	147.3	130.8	133.9	131.3	84.3	86.8	92.7	75.8	58.9	103.2	1,315.4
Georgia Power.....	90.1	62.8	77.6	90.1	84.1	42.6	57.3	55.8	61.1	45.0	33.1	84.9	784.3
South Carolina Power.....	9.7	8.0	10.6	9.1	9.3	4.8	6.5	5.8	3.2	3.1	2.9	6.4	79.4
Tennessee Electric Power.....	49.5	39.4	50.4	51.7	52.7	30.4	43.7	51.1	37.7	27.0	23.5	40.1	497.2
Total hydro generation—1,000,000 kwh.....	278.6	251.3	285.9	281.6	279.9	209.1	191.8	199.5	194.7	151.0	118.4	234.6	2,676.5
As Increased by Availability of More Load—													
1939—10%.....	301.9	272.3	309.8	305.2	303.4	209.1	191.8	199.5	194.7	151.0	118.4	234.6	2,791.7
1943—25%.....	336.9	303.8	345.6	340.6	338.6	209.1	191.8	199.5	194.7	151.0	118.4	234.6	2,964.6
1939													
Fuel plants usable capacity ¹ expressed as a percentage of typical monthly peak.....	35.1	36.6	37.0	35.6	36.3	35.3	32.9	33.4	29.7	31.5	31.3	30.4	.....
Fuel energy obtainable under load curve from usable fuel capacity at the base on:													
Weekdays—1,000,000 kwh.....	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	.....
Saturdays—1,000,000 kwh.....	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	.....
Sundays and holidays—1,000,000 kwh.....	7.37	7.23	7.19	7.32	7.26	7.35	7.55	7.51	7.69	7.63	7.64	7.69	.....
Total energy obtainable from fuel plants— 1,000,000 kwh.....	153.9	132.9	133.3	141.4	154.7	232.7	241.0	241.1	233.9	241.7	233.7	241.8	2,382.1
1943													
Fuel plants usable capacity ¹ expressed as a percentage of typical monthly peak.....	27.2	28.3	28.7	27.6	28.1	27.3	25.5	25.9	23.6	24.4	24.2	23.5	.....
Fuel energy obtainable under load curve from usable fuel capacity at the base on:													
Week days—1,000,000 kwh.....	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	.....
Saturdays—1,000,000 kwh.....	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	7.83	.....
Sundays and holidays—1,000,000 kwh.....	7.83	7.81	7.79	7.83	7.82	7.83	7.83	7.83	7.83	7.83	7.83	7.83	.....
Total energy obtainable from fuel plants— 1,000,000 kwh.....	242.5	219.0	226.1	234.7	242.5	234.7	242.5	242.5	234.7	242.5	234.7	242.5	2,838.9

NOTE: 1. Usable fuel plant capacity is 85% of dependable capacity excluding plants suitable only for standby ($0.85 \times 383,362 = 326,000$ kw.).

[fol. 4239]

DEFENDANTS' EXHIBIT No. 134

Sheet 7

Commonwealth and Southern

Southeastern Group

Table G

Typical Load Curves of Peak Month*

December:

Time	Weekdays*	Saturdays	Sundays and Holidays
12- 1 AM	50.57	50.39	32.57
1- 2 AM	46.69	48.15	29.37
2- 3 AM	45.72	46.33	28.56
3- 4 AM	45.26	44.69	28.09
4- 5 AM	45.92	44.38	27.31
5- 6 AM	54.08	48.55	28.72
6- 7 AM	75.97	56.42	27.79
7- 8 AM	88.46	66.91	35.95
8- 9 AM	91.42	67.73	38.28
9-10 AM	95.05	67.59	37.50
10-11 AM	95.77	68.60	39.86
11-12 M	93.03	66.79	38.63
12- 1 PM	84.78	61.54	38.91
1- 2 PM	89.52	60.90	36.02
2- 3 PM	90.25	58.57	37.53
3- 4 PM	88.83	55.55	32.34
4- 5 PM	89.80	61.42	37.98
5- 6 PM	100.00	69.73	48.89
6- 7 PM	91.29	66.45	49.83
7- 8 PM	87.23	64.09	48.44
8- 9 PM	86.39	60.62	46.51
9-10 PM	79.50	55.52	42.29
10-11 PM	63.55	45.79	35.01
11-12 PM	54.98	38.27	32.97

* Composite monthly weekday curve taken from monthly typical load curves as follows: Alabama Power Company, November; Georgia Power Company, November; Mississippi Power Company, August; South Carolina Power Company, December.

DEFENDANTS' EXHIBIT No. 134

[fol. 4240]

Sheet 8

Electric Power and Light—National Power and Light Group
(Electric Bond and Share)

Table A

Capacity Summary Sheet

	1936 1,000 kw.	1939 1,000 kw.	1943 1,000 kw.
Maximum annual demand.....	225.8	281.6	370.1
Demand increased by 7½% margin to give maximum contemplated requirement.....		302.7	397.9
Capability fuel plants.....	205.0		
Capability present hydro plants having pond- age.....	66.0		
Total available system capability representa- tive dry year.....	271.0	271.0	271.0
Apparatus reserves required:			
Machine reserves:			
Largest unit down.....		30.0	30.0
Other units down.....		12.5	15.0
Transmission and miscellaneous, 5%.....		14.0	18.1
Total apparatus reserves.....		56.5	63.1
Capacity remaining beyond reserves to meet maximum contemplated requirement.....		214.5	207.9
Capacity to be obtained elsewhere.....		88.2	190.0
Capacity from firm contracts.....			
Balance to be purchased.....		88.2	190.0
Capacity required only for reserves.....			13.0
Notes:			
Firm capacity necessary to supply firm energy to be purchased.....		90.6	177.0
Total reserves above forecast demand, all sorts.....		77.4	90.9
These reserves as a percent of total available capacity, including purchases.....		21.7%	19.9%

[fol. 4241]

Sheet 9

Electric Power and Light—National Power and Light Group
(Electric Bond and Share)

Table B

Energy Summary Sheet

	1936 1,000,000 kwh.	1939 1,000,000 kwh.	1943 1,000,000 kwh.
Annual energy required.....	1,142.7	1,418.2	1,867.6
Obtainable from system fuel plants.....		1,242.8	1,398.8
Obtainable from system hydro plants (in 1936, taken as a representative dry year).....	42.7	42.7	42.7
Energy to be obtained elsewhere.....		132.7	426.1
Energy obtainable from contracts.....			
Balance to be purchased.....		132.7	426.1

DEPENDANTS' EXHIBIT No. 134

Sheet 10

fol. 4242]

Electric Power and Light—National Power and Light Group
(Electric Bond and Share)

Table C

Forecast—Demand and Energy

Year	Annual Rate Increase Assumed	Sum of the Several System Demands 1,000 kw.	Diversified Demand or "Peak"* 1,000 kw.	Load Factor	Energy Require- ments 1,000,000 kwh.
1934		183.6†	172.6	58.2%	879.8†
1935	7.2%	196.9†	185.1	59.0%	957.2†
1936	22.0%	240.3†	225.8	57.6%	1,142.7†
1937	9.0%	261.9	246.1	57.6%	1,241.8
1938	5.9%	277.4	260.7	57.4%	1,310.9
1939	8.0%	299.6	281.6	57.5%	1,418.2
1940	9.0%	325.5	306.9	57.6%	1,552.8
1941	6.0%	346.1	325.2	57.5%	1,638.5
1942	4.4%	361.3	339.6	57.4%	1,707.6
1943	9.0%	393.8	370.1	57.6%	1,867.6

Average of the annual rates of increase, year by year, 1938-1943, 7.0%.

* Saving through diversity taken as 6.4%.

† Reported by companies.

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4158A

DEFENDANTS' EXHIBIT No. 134

[fol. 4243]

Sheet 11

Electric Power and Light
National Power and Light Group
(Electric Bond and Share)

Table D

Analysis of Demand and Energy Forecasts by Months

	January	February	March	April	May	June	July	August	September	October	November	December	Year
1936													
Percentage monthly breakdown of annual energy.....	7.25	7.13	6.76	6.87	7.37	8.82	8.76	9.74	10.38	9.38	8.93	8.61	100.00
Percentage of monthly energy under Saturday and Sunday plus holiday typical load curves.....	25.94	22.75	24.74	22.49	26.04	24.02	29.07	26.68	26.14	23.99	25.76	27.01	.....
Average number of week-days in month, all years.....	21.14	20.00	22.14	21.42	22.14	21.42	21.14	22.14	20.42	22.14	20.42	21.14	.....
Average number of Saturdays in month, all years.....	4.43	4.00	4.43	4.29	4.43	4.29	4.43	4.43	4.29	4.43	4.29	4.43	.....
Average number of Sundays and holidays in month, all years.....	5.43	4.00	4.43	4.29	4.43	4.29	5.43	4.43	5.29	4.43	5.29	5.43	.....
1939													
Monthly breakdown of energy forecast, 1936 breakdown—1,000,000 kwh.....	102.8	101.1	95.9	97.4	104.5	125.1	124.2	138.2	147.2	133.0	126.7	122.1	1,418.2
Daily energy under typical week-day load curve 1,000,000 kwh.....	3.60	3.91	3.26	3.52	3.49	4.44	4.15	4.58	5.32	4.57	4.61	4.21	.....
Typical peaks for forecast requirements, load factor 79.4%—1,000 kw.....	188.9	205.1	171.0	184.7	183.1	232.9	217.7	240.3	279.1	239.8	241.9	220.9	.....
1943													
Monthly breakdown of energy forecast, 1936 breakdown—1,000,000 kwh.....	135.4	133.2	126.2	128.3	137.6	164.7	163.6	181.9	193.9	175.2	166.8	160.8	1,867.6
Daily energy under typical week-day load curve—1,000,000 kwh.....	4.74	5.15	4.29	4.64	4.60	5.84	5.47	6.03	7.01	6.02	6.06	5.55	.....
Typical peaks for forecast requirements, load factor 79.4%—1,000 kw.....	248.7	270.2	225.1	243.4	241.3	306.4	287.0	316.4	367.8	315.8	317.9	291.2	.....

DEFENDANTS' EXHIBIT No. 134

(fol. 4244)

Sheet 12

Electric Power and Light

National Power and Light Group

(Electric Bond and Share)

Table E

Power Assignments Under the Typical Load Curve for the Maximum Month

September

	1939	1943
Usable fuel capacity—85% of plants capability— 1,000 kw.....	172.8	172.8
Usable fuel capacity as a percent of typical monthly peak.....	61.98%	47.04%
Dry year hydro energy available—1,000,000 kwh.....	2.0	2.0
Percent of typical monthly peak supportable by system hydro energy, placed at top of load curve.....	5.56%	4.85%
Balance of typical peak requiring new capacity—1,000 kw.....	90.6	177.0
Energy necessary to support this new capacity under the typical weekly load curve—1,000,000 kwh.....	31.1	68.3

4160

(Here follows 1 paster, side folio 4245)



4160A

[fol. 4245]

DEFENDANTS' EXHIBIT No. 134

Sheet 13

Electric Power and Light

National Power and Light Group
(Electric Bond and Share)

Table F

Hydro and Steam Generation

	January	February	March	April	May	June	July	August	September	October	November	December	Year
Hydro plants generation in representative dry year—1936—1,000,000 kwh.:													
Carpenter.....	5.748	0.884	2.006	3.041	0.208	0.296	0.073	0.024	1.000	0.236	1.983	9.304	24.657
Rommel.....	3.971	0.862	1.721	2.223	0.736	0.304	0.125	0.208	0.892	0.281	1.697	3.698	16.718
Russellville ¹	0.315	0.055	0.121	0.170	0.031	0.019	0.002	0.008	0.061	0.017	0.119	0.421	1.339
Total hydro generation—1,000,000 kwh.	10.034	1.801	3.848	5.434	0.975	0.619	0.054	0.240	1.953	0.534	3.799	13.423	42.714
1939													
Fuel plants usable capacity ² expressed as a percentage of typical monthly peak.....	91.58	84.35	100.00	93.67	94.48	74.28	79.47	71.99	61.98	72.14	71.52	78.32	.....
Fuel energy obtainable under load curve from usable fuel capacity at the base on:													
Week-days—1,000,000 kwh.....	3.48	3.58	3.26	3.44	3.43	3.72	3.65	3.76	3.92	3.76	3.76	3.66	.....
Saturdays—1,000,000 kwh.....	3.44	3.59	3.18	3.40	3.38	3.73	3.66	3.76	3.93	3.77	3.77	3.68	.....
Sundays and holidays—1,000,000 kwh.....	2.22	2.41	2.01	2.17	2.15	2.74	2.56	2.82	3.26	2.81	2.84	2.60	.....
Total energy obtainable from fuel plants—1,000,000 kwh.....	92.8	95.6	92.0	92.0	100.5	107.5	107.3	112.5	114.1	112.4	108.2	107.9	1,242.8
1943													
Fuel plants usable capacity ² expressed as a percentage of typical monthly peak.....	69.56	64.03	76.85	71.08	71.69	56.46	60.28	54.68	47.04	54.78	54.42	59.41	.....
Fuel energy obtainable under load curve from usable fuel capacity at the base on:													
Week-days—1,000,000 kwh.....	3.80	3.89	3.70	3.78	3.77	4.01	3.94	4.04	4.15	4.08	4.04	3.96	.....
Saturdays—1,000,000 kwh.....	3.81	3.90	3.70	3.76	3.77	4.02	3.98	3.96	4.05	4.15	4.09	3.98	.....
Sundays & Holidays—1,000,000 kwh.....	2.92	3.16	2.64	2.85	2.83	3.53	3.34	3.62	3.98	3.62	3.63	3.38	.....
Total energy obtainable from fuel plants—1,000,000 kwh.....	113.1	106.0	109.7	109.4	112.6	118.3	119.1	123.5	123.6	124.6	119.2	119.7	1,398.8

NOTE: ¹ Annual generation reported for Russellville prorated by months in proportion to Carpenter and Remmel monthly generation.² Fuel plant usable capacity is 85% of reported dependable fuel capacity.

[fol. 4246]

DEFENDANTS' EXHIBIT No. 134

Sheet 14

Electric Power and Light

National Power and Light Group
(Electric Bond and Share)

Table G

Typical Load Curves of Peak Month¹

September

Time	Weekdays ¹	Saturdays	Sundays and Holidays
12- 1 AM	52.0	53.6	46.2
1- 2 AM	48.5	49.7	43.4
2- 3 AM	47.2	48.7	41.1
3- 4 AM	47.1	47.3	39.4
4- 5 AM	46.8	46.7	38.3
5- 6 AM	51.5	49.6	38.7
6- 7 AM	68.5	63.9	41.4
7- 8 AM	92.0	84.9	47.6
8- 9 AM	97.3	95.3	51.1
9-10 AM	98.9	97.7	51.0
10-11 AM	98.7	98.3	50.3
11-12 M	97.3	100.0	50.9
12- 1 PM	87.8	90.8	50.8
1- 2 PM	95.3	95.6	50.2
2- 3 PM	95.9	94.6	48.7
3- 4 PM	96.6	90.6	47.6
4- 5 PM	98.4	87.3	45.9
5- 6 PM	98.3	83.2	48.1
6- 7 PM	97.9	89.9	59.9
7- 8 PM	96.2	94.1	66.1
8- 9 PM	89.9	88.2	63.2
9-10 PM	80.4	81.4	58.4
10-11 PM	66.1	69.7	50.5
11-12 PM	57.2	59.8	44.7

¹ Composite monthly weekday curve taken from monthly typical load curves as follows: Arkansas Power & Light Co., September; Memphis Power & Light Co., December; Mississippi Power & Light Co., September.

DEFENDANTS' EXHIBIT No. 134

[fol. 4247]

Sheet 15

Carolina Power and Light Tennessee Public Service Group

Table A

Capacity Summary Sheet

	1936 1,000 kw.	1939 1,000 kw.	1943 1,000 kw.
Maximum annual demand.....	62.9	78.4	100.3
Demand increased by 7½% margin to give maximum contemplated requirement.....		84.3	107.8
Capability fuel plants.....	15.0		
Capability present hydro plants having pondage.....	103.0		
Total available system capability rep- resentative dry year.....	123.0	123.0	123.0
Apparatus reserves required--Machine reserves:			
Largest unit down, installed capacity 36.0 ¹		20.0	20.0
Other units down.....			
Transmission and miscellaneous, 5%.....		6.2	6.2
Total apparatus reserves.....		26.2	26.2
Capacity remaining beyond reserves to meet maximum contemplated requirement.....		96.8	96.8
Capacity to be obtained elsewhere.....			11.0
Capacity of firm contracts, Wateree Exchange, delivery, Est.....		5.0	5.0
Balance to be purchased.....			16.0
Notes: Firm capacity necessary to supply firm energy to be purchased.....		28.0	45.4
Total reserves above forecast demand, all sorts.....		32.1	32.1
These reserves as a percent of total available capacity including purchases.....		29%	25%

¹ Assume that 16,000 kw. of the load of this unit will be taken up by Appalachian Electric Power or Wateree under contract in emergency.

[fol. 4248]

Sheet 16

Carolina Power and Light--Tennessee Public Service Group

Table B

Energy Summary Sheet

	1936 1,000,000 kwh.	1939 1,000,000 kwh.	1943 1,000,000 kwh.
Annual energy required.....	294.5	360.6	467.7
Obtainable from system fuel plants.....		54.9	69.3
Obtainable from system hydro plants (in 1931, taken as a representative dry year).....		241.3	267.6
Energy to be obtained elsewhere.....		64.4	130.8
Energy obtainable from con- tracts, Wateree, same as 1936, delivered.....		9.5	9.5
Balance to be purchased.....		73.9	140.3

DEFENDANTS' EXHIBIT No. 134

[fol. 4249]

Sheet 17

Carolina Power and Light—Tennessee Public Service Group

Table C

Forecast—Demand and Energy

Year	Annual Rate Increase Assumed	Sum of the Several Sys- tem Demands 1,000 kw.	Diversified Demand or "Peak" ¹ 1,000 kw.	Load Factor	Energy Requirements 1,000,000 kwh.
1934		48.9	48.4	52.1%	220.8
1935	9.6%	53.6	53.1	53.6%	249.0
1936	18.5%	63.5	62.9	53.5%	294.5
1937	10.0%	69.9	69.2	52.9%	320.3
1938	8.0%	75.5	74.7	52.8%	344.9
1939	4.7%	79.2	78.4	52.5%	360.6
1940	6.9%	85.1	84.2	53.3%	394.0
1941	6.5%	91.0	90.1	53.0%	418.3
1942	3.0%	93.8	92.8	52.2%	424.3
1943	8.0%	101.3	100.3	53.2%	467.7

Average of the annual rates of increase, year by year, 1938-1943, 6.2%.

¹Saving through diversity taken as 1%.

(Here follows 1 paster, side folio 4250)



[fol. 4250]

4164A

DEFENDANTS' EXHIBIT No. 134

Sheet 18

Carolina Power and Light
Tennessee Public Service Group

Table D

Analysis of Demand and Energy Forecasts by Months

	January	February	March	April	May	June	July	August	September	October	November	December	Year
	1936												
Percentage monthly breakdown of annual energy	7.94	7.12	7.55	7.36	7.74	8.11	8.78	8.72	9.13	9.36	8.84	9.35	100.00
Percentage of monthly energy under Saturday and Sunday plus holiday typical load curves	21.0	19.3	20.0	18.9	19.8	20.6	21.5	20.1	21.6	19.7	21.6	22.5	.....
Average number of week-days in month, all years	21.14	20.00	22.14	21.42	22.14	21.42	21.14	22.14	20.42	22.14	20.42	21.14	.....
Average number of Saturdays in month, all years	4.43	4.00	4.43	4.29	4.43	4.29	4.43	4.43	4.29	4.43	4.29	4.43	.....
Average number of Sundays and holidays in month, all years	5.43	4.00	4.43	4.29	4.43	4.29	5.43	4.43	5.29	4.43	5.29	5.43	.....
	1939												
Monthly breakdown of energy forecast, 1936 breakdown 1,000,000 kwh.	28.6	25.7	27.2	26.5	27.9	29.3	31.7	31.4	32.9	33.8	31.9	33.7	360.6
Daily energy under typical week-day load curve—1,000,000 kwh.	1.07	1.04	0.98	1.00	1.01	1.08	1.17	1.13	1.26	1.22	1.22	1.24	.....
Typical peaks for forecast requirements, load factor 73.9%—1,000 kw.	60.5	58.4	55.5	56.6	57.0	61.2	66.3	64.0	71.3	69.1	69.1	69.8	.....
	1943												
Monthly breakdown of energy forecast, 1936 breakdown—1,000,000 kwh.	37.2	33.3	35.3	34.4	36.2	37.9	41.0	40.8	42.7	43.8	41.4	43.7	467.7
Daily energy under typical week-day load curve—1,000,000 kwh.	1.39	1.35	1.27	1.30	1.31	1.40	1.52	1.47	1.64	1.58	1.58	1.61	.....
Typical peaks for forecast requirements, load factor 73.9%—1,000 kw.	78.5	75.8	72.1	73.5	73.9	79.3	85.9	83.1	92.5	89.6	89.6	90.5	.....

DEFENDANTS' EXHIBIT No. 134

SA 4251

Sheet 19

Carolina Power and Light—Tennessee Public Service Group

Table E

Power Assignments Under the Typical Load Curve For the Maximum Month
October

	1939	1943
Usable fuel capacity—85% of plants capability—1,000 kw.	10.2	10.2
Usable fuel capacity as a percent of typical monthly peak	14.77%	11.39%
Dry year hydro energy available—1,000,000 kwh.	\$ 39	\$ 39
Percent of typical monthly peak supportable by system hydro energy, placed at top of load curve	44.75%	37.90%
Balance of typical peak requiring new capacity—1,000 kw.	25.0	45.4
Energy necessary to support this new capacity under the typical weekly load curve—1,000,000 kwh.	17.77	27.80

4166

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[fol. 4252]

4166A

DEFENDANTS' EXHIBIT No. 134

Sheet 20

Carolina Power and Light

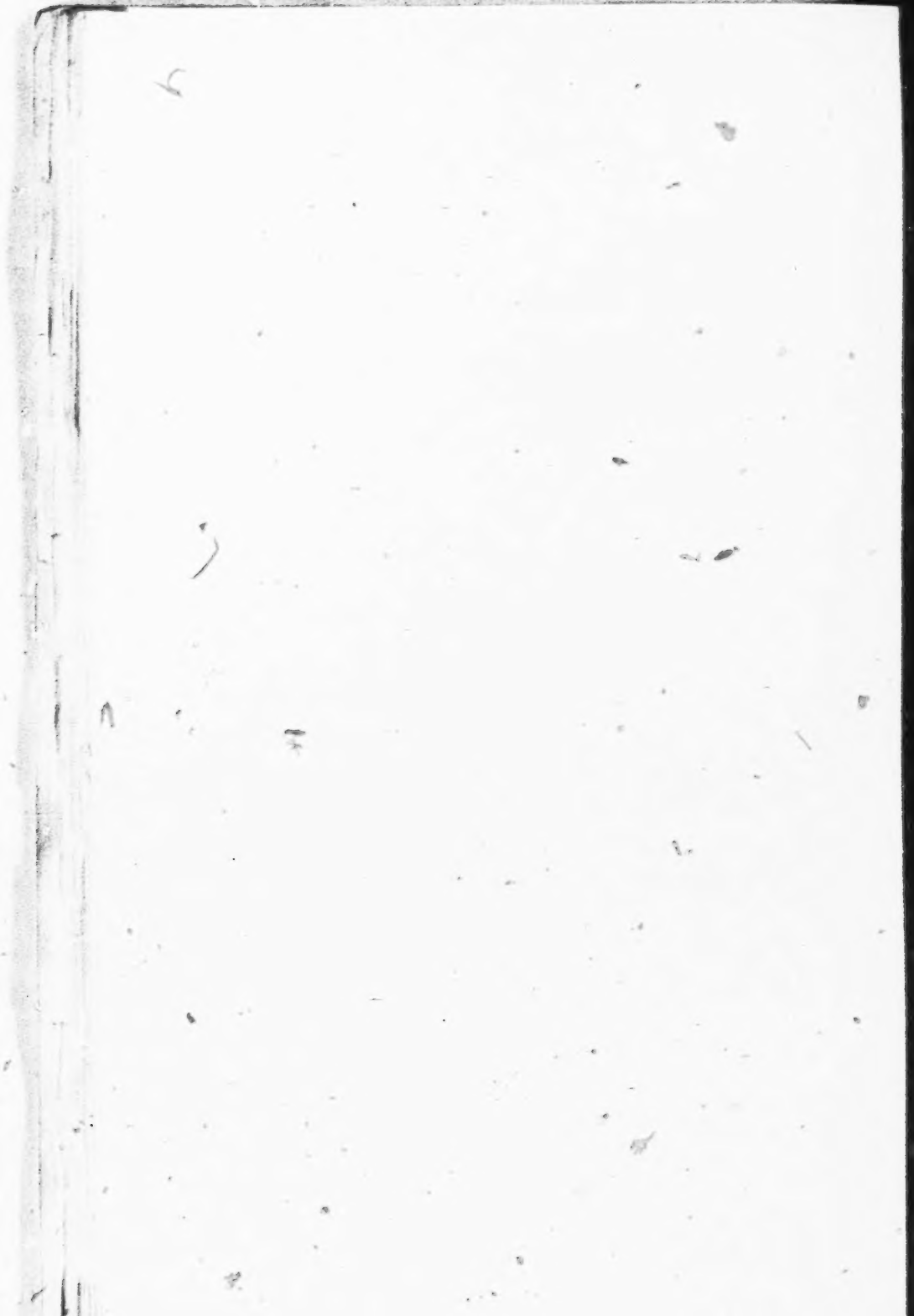
Tennessee Public Service Group

Table F

Hydro and Steam Generation

	January	February	March	April	May	June	July	August	September	October	November	December	Year
Hydro plants generation in representative dry year—1931—1,000,000 kwh.													
Waterville.....	27.159	17.769	21.077	29.116	28.947	18.723	12.696	14.677	13.122	7.817	6.893	27.239	225.235
Marshall.....	1.881	1.484	2.041	1.880	1.952	1.296	1.201	1.374	0.576	0.301	0.424	1.773	16.183
Weaver ¹	0.956	0.634	0.761	1.020	1.018	0.659	0.458	0.528	0.451	0.267	0.241	0.955	7.948
Total hydro generation—1,000,000 kwh.....	29.996	19.887	23.879	32.016	31.917	20.678	14.355	16.579	14.149	8.385	7.558	29.967	249.366
10% added for better use of water through greater load in 1939—1,000,000 kwh.....	1.887	1.251	1.503	2.014	2.008								8.663
Grand total hydro generation 1939—1,000,000 kwh.....	31.883	21.138	25.382	34.030	33.925	20.678	14.355	16.579	14.149	8.385	7.558	29.967	258.029
15% added for better use of water through greater load in 1943—1,000,000 kwh.....	2.831	1.877	2.254	3.022	3.012								12.996
Grand total hydro generation 1943—1,000,000 kwh.....	34.714	23.015	27.636	37.052	36.937	20.678	14.355	16.579	14.149	8.385	7.558	29.967	271.025
1939													
Fuel Plants:													
Total energy generated by fuel—1,000,000 kwh.....		4.52	1.83			7.34	7.59	7.59	7.34	7.59	7.34	3.75	54.89
1943													
Fuel Plants:													
Total energy generated by fuel—1,000,000 kwh.....	2.460	6.85	7.59			7.34	7.59	7.59	7.34	7.59	7.34	7.59	69.28

NOTE: 1. Annual generation reported for Weaver prorated by months in proportion to Waterville and Marshall monthly generation.



DEFENDANTS' EXHIBIT No. 134

[fol 4253]

Sheet 21

Carolina Power and Light—Tennessee Public Service Group

Table G

Typical Load Curves of Peak Month

Time	Weekdays	Saturdays	Sundays and Holiday
12- 1 AM.....	47.89	46.38	31.76
1- 2 AM.....	41.05	40.52	30.23
2- 3 AM.....	40.68	39.40	25.65
3- 4 AM.....	40.57	39.48	27.12
4- 5 AM.....	38.67	38.64	25.83
5- 6 AM.....	41.17	39.36	26.06
6- 7 AM.....	56.55	46.23	27.14
7- 8 AM.....	83.46	57.41	28.03
8- 9 AM.....	92.67	68.93	32.93
9-10 AM.....	91.35	68.54	35.43
10-11 AM.....	93.77	68.59	32.97
11-12 M.....	93.99	70.03	32.85
12- 1 PM.....	83.33	60.85	35.11
1- 2 PM.....	88.93	58.36	33.18
2- 3 PM.....	88.23	55.81	28.50
3- 4 PM.....	87.13	51.10	27.37
4- 5 PM.....	89.28	48.35	28.78
5- 6 PM.....	94.76	60.25	35.20
6- 7 PM.....	100.00	66.74	49.80
7- 8 PM.....	91.08	67.39	50.47
8- 9 PM.....	86.51	60.37	46.20
9-10 P.M.....	79.63	57.01	41.92
10-11 P.M.....	64.67	51.73	34.62
11-12 P.M.....	51.14	40.10	30.08

DEFENDANTS' EXHIBIT No. 134

[fol 4253]

Sheet 21

Carolina Power and Light—Tennessee Public Service Group

Table G

Typical Load Curves of Peak Month

Time	Weekdays	Saturdays	Sundays and Holiday
12- 1 AM.....	47.89	46.38	31.76
1- 2 AM.....	41.05	40.52	30.23
2- 3 AM.....	40.68	39.40	25.65
3- 4 AM.....	40.57	39.48	27.12
4- 5 AM.....	38.67	38.64	25.83
5- 6 AM.....	41.17	39.36	26.06
6- 7 AM.....	56.55	46.23	27.14
7- 8 AM.....	83.46	57.41	28.03
8- 9 AM.....	92.67	68.93	32.93
9-10 AM.....	91.35	68.54	35.43
10-11 AM.....	93.77	68.59	32.97
11-12 M.....	93.99	70.03	32.85
12- 1 PM.....	83.33	60.85	35.11
1- 2 PM.....	88.93	58.36	33.18
2- 3 PM.....	88.23	55.81	28.50
3- 4 PM.....	87.13	51.10	27.37
4- 5 PM.....	89.28	48.35	28.78
5- 6 PM.....	94.76	60.25	35.20
6- 7 PM.....	100.00	66.74	49.80
7- 8 PM.....	91.08	67.39	50.47
8- 9 PM.....	86.51	60.37	46.20
9-10 P.M.....	79.63	57.01	41.92
10-11 P.M.....	64.67	51.73	34.62
11-12 P.M.....	57.14	40.10	30.08

DEFENDANTS' EXHIBIT NO. 134

[fol. 4254]

Sheet 22

Kentucky Utilities

Table A

Capacity Summary Sheet

	1936 1,000 kw.	1939 1,000 kw.	1943 1,000 kw.
Maximum annual demand:			
Whole system	69.0		
Pineville district	32.6	37.8	44.4
Demand increased by 7½% margin to give maximum contemplated requirement		40.6	47.7
Capacity fuel plants	42.0		
Capacity present hydro plants through 66 kv. Dix line	4.0		
Total available system capability representative dry year	46.0	46.0	46.0
Apparatus reserves required—Machine reserves:			
Largest unit down		16.0	16.0
Other units down			
Transmission and miscellaneous		1.9	2.2
Total apparatus reserves		17.9	18.2
Capacity remaining beyond reserves to meet maximum contemplated requirement		28.1	27.8
Capacity to be obtained elsewhere		12.5	19.9
Capacity from firm contracts, sale		2.5	2.5
Balance to be purchased		15.0	22.4
Capacity required only for reserve		15.0	17.8
Notes: Firm capacity necessary to supply firm energy to be purchased			4.6
Total reserves above forecast demand, all sorts		20.7	21.5
These reserves as a percent of total available capacity, including purchases		35.3%	32.7%

[fol. 4255]

Sheet 23

Kentucky Utilities

Table B

Energy Summary Sheet

	1936 1,000,000 kwh.	1939 1,000,000 kw	1943 1,000,000 kwh
Annual energy required:			
Whole system	252.5		
Pineville district	163.4	189.8	224.1
Obtainable from system fuel plants		189.8	222.8
Obtainable from system hydro plants			
Energy to be obtained elsewhere			1.3
Energy obtainable from contracts (same as 1936)			1.0
Balance to be purchased			2.3

DEFENDANTS' EXHIBIT No. 134

[fol. 4256]

Sheet 24

Kentucky Utilities

Table C

Forecast¹—Demand and Energy

Year	Sum of the Several System Demands ² 1,000 kw.	Load Factor	Energy Requirements 1,000,000 kwh.
1936.....	32.6	60.8%	163.4
1937.....	34.4	57.2%	172.0
1938.....	36.1	57.2%	180.8
1939.....	37.8	57.2%	189.8
1940.....	39.5	57.2%	199.1
1941.....	41.1	57.2%	207.0
1942.....	42.8	57.2%	215.7
1943.....	44.4	57.2%	224.1

Average of the annual rates of increase, year by year, 1938-1943, 4.8%.

¹Forecast values based on predictions by company.²No diversity taken.

Sheet 25

[fol. 4257]

Kentucky Utilities

Table E

Power Assignments Under the Typical Load Curve for the Maximum Month

February

	1930	1943
Usable fuel capacity—85% of plants capability— 1,000 kw.....	35.7	35.7
Usable fuel capacity as a percent of typical monthly peak.....	over 100.0%	88.6%
Dry year hydro energy available 1,000,000 kwh.....	.....	.....
Percent of typical monthly peak supportable by system hydro energy placed at top of load curve.....	.....	.....
Balance of typical peak requiring new capacity— 1,000 kw.....	.....	4.6
Energy necessary to support this new capacity under the typical weekly load curve—1,000,000 kwh.....	.....	0.39

[fol. 4258] DEFENDANTS' EXHIBIT NO. 134

Sheet 26

Kentucky Utilities

Table G

Typical Load Curves of Peak Month

Time	Weekdays	Saturdays	Sundays and Holidays
12- 1 AM	49.93	45.48	38.67
1- 2 AM	43.56	44.74	34.82
2- 3 AM	43.48	38.22	34.37
3- 4 AM	38.22	37.04	34.22
4- 5 AM	34.96	41.19	36.07
5- 6 AM	38.82	56.30	32.15
6- 7 AM	50.37	61.11	34.37
7- 8 AM	77.93	75.56	43.41
8- 9 AM	94.22	70.22	42.52
9-10 AM	96.15	71.33	45.26
10-11 AM	95.41	70.30	46.37
11-12 M	95.70	72.30	46.37
12- 1 PM	87.41	69.63	40.44
1- 2 PM	87.70	65.48	39.56
2- 3 PM	90.08	64.00	43.26
3- 4 PM	89.48	62.96	48.89
4- 5 PM	77.85	72.52	66.67
5- 6 PM	92.45	68.37	70.52
6- 7 PM	100.00	64.37	68.15
7- 8 PM	92.15	61.48	62.22
8- 9 PM	84.45	62.37	56.59
9-10 PM	80.00	57.33	48.59
10-11 PM	74.22	50.96	39.11
11-12 PM	61.33	47.41	34.15

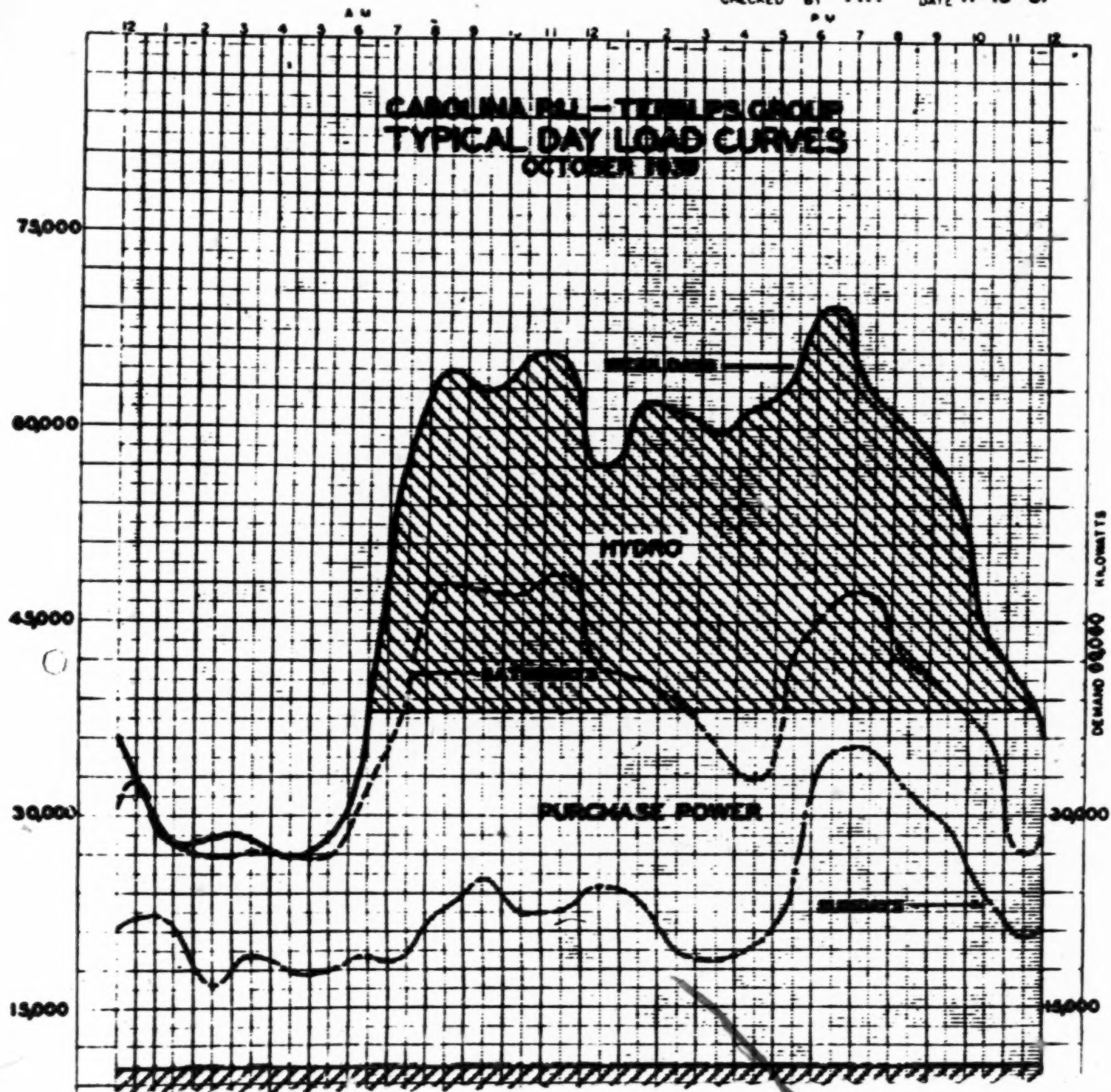
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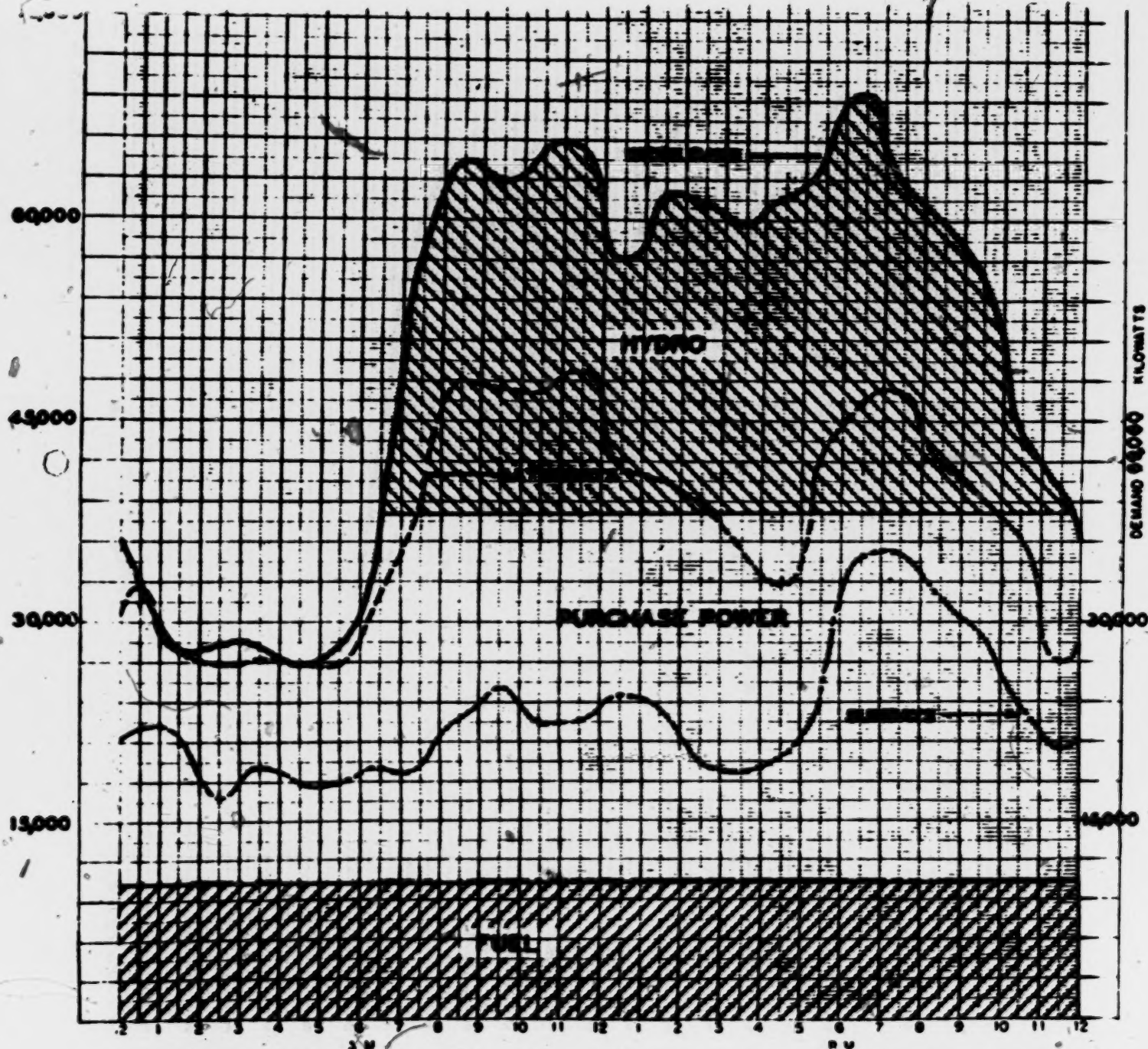
Sundays and
Holidays
38.07
34.82
34.37
34.22
36.07
32.16
34.37
43.41
42.02
45.26
40.37
39.56
39.56
43.26
48.89
66.67
70.02
68.15
62.22
56.66
48.89
39.11
34.16

DEFENDANTS' EXHIBIT NO. 154

PREPARED BY PHT
CHECKED BY PHT

DATE 11-15-37
DATE 11-15-37





NOTES SYSTEM HYDRO ALLOCATED IN PEAK-30800 KW

SYSTEM FUEL ALLOCATED IN BASE - 10,200 KW

PURCHASED POWER REQUIRED IS THE INTERMEDIATE
BAND-20000 KW

ENERGY IN THIS BAND-17,770,000 KWH

DAILY LOAD CURVE SHEET

WEEKDAY-SATURDAY-SUNDAY

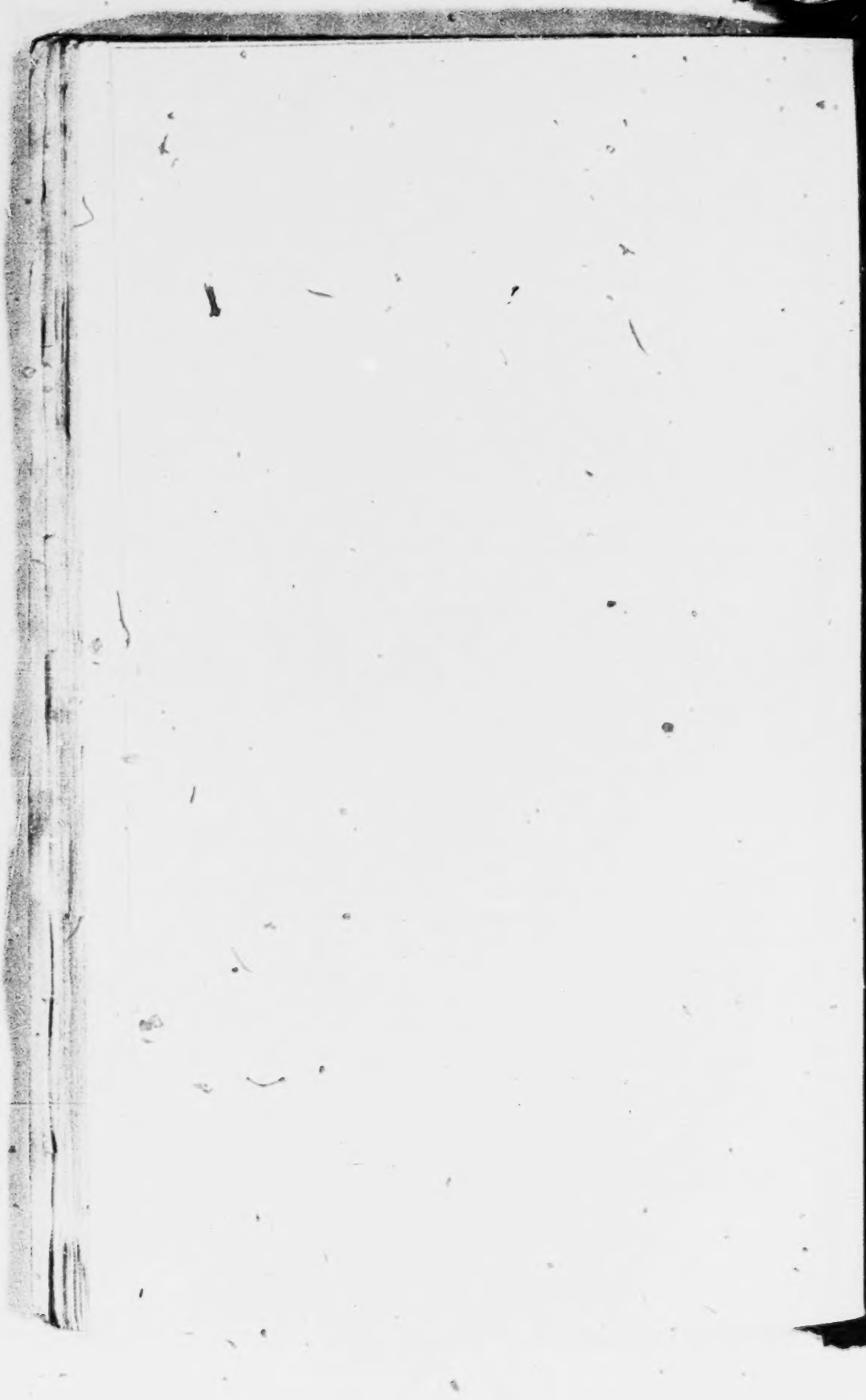
TYPICAL

CAROLINA P&L - TENN. PS

COMPANY OF S-17-10

4259

4170A



[fol. 4260] DEFENDANTS' EXHIBIT No. 135

Stipulation

It is hereby stipulated and agreed by and between the parties hereto, by their respective solicitors, as follows:

1. For the purposes of this proceeding only, and without prejudice to any other suit or proceeding between the parties hereto, or otherwise, the facts contained in this stipulation and in the exhibits filed herewith, shall have the same force and effect as though offered and received in this proceeding as the testimony of competent witnesses, or as competent documents.

2. None of the parties, by entering into this stipulation, shall be deemed to have conceded the relevancy or materiality of any fact herein contained and no objection shall be required to be entered on the record to preserve the right of any party to question such relevancy or materiality at any stage of the proceeding.

3. Over eighty-five per cent (85%) of the voting stock of the complainants Memphis Power and Light Company, the Birmingham Electric Company, the Carolina Power and Light Company, the Holston River Electric Company, the Tennessee Public Service Company, the West Tennessee Power & Light Company, is owned by the National Power & Light Company. One hundred per cent (100%) of the voting stock of the complainant Appalachian Electric Power Company is owned by the American Gas & Electric Company, and the complainant Appalachian Electric Company in turn owns one hundred per cent (100%) of the voting stock of complainants Kingsport Utilities, Inc., and Kentucky and West Virginia Power Companies. Approximately ninety-four per cent (94%) of the voting stock of the complainant Mississippi Power & Light Company is owned by the Electric Power & Light Corporation.

4. The Electric Bond & Share Corporation, a New York corporation having its principal place of business at 2 Rector Street, New York City, owns a substantial share of the outstanding securities of the American Gas & Electric Company, the National Power & Light Company, and Electric Power & Light Corporation heretofore described as owning a substantial share of the outstanding securities of certain of the complainants.

DEPENDANTS' EXHIBIT No. 135

5. The following is a precise description of the affiliations through stock ownership described in paragraphs 3 and 4.

A. The Electric Bond & Share Company owns approximately the following voting securities of the American Gas & Electric Company, the National Power & Light Company, and the Electric Power & Light Company which represent approximately the following percentages of the total outstanding voting securities of each of said companies:

[fol. 4261]

Company and Class of Stock	Number of Shares Held	Percentages of Outstanding Voting Securities
American Gas:		
Common Stock	846,935	17.51%
National Company:		
Common Stock	2,540,438	46.56%
Electric Company:		
\$7 Preferred Stock	485	47.20%
Common Stock	1,976,638	

B. American Gas & Electric Company owns all of the outstanding securities, other than directors' qualifying shares, if any, of the following complainants. Said complainants, in turn, own outstanding voting securities of the complainants named under them, which represent the percentages of the total outstanding voting securities of said companies, which are complainants, set forth opposite their respective names:

- (1) Appalachian Electric Power Company:
- (a) Kentucky & West Virginia Power Company 100%
 - (b) Kingsport Utilities, Inc. 100%

C. The National Power & Light Company owns outstanding voting securities of the following complainants which represent the percentages of the total outstanding voting securities of said companies, which are complainants, set opposite their respective names:

- (1) Birmingham Electric Company 100.00%
- (2) Carolina Power & Light Company 93.53%

DEFENDANTS' EXHIBIT No. 135

(3) Holston River Electric Company	100.00%
(4) Memphis Power & Light Company	86.75%
(5) Tennessee Public Service Company	99.31%
(6) West Tennessee Power & Light Company	100.00%

D. The Electric Power & Light Company owns 94.03 per cent of the voting shares of the complainant Mississippi Power & Light Company.

6. The charts attached to the stipulation as Exhibit A are a reasonably accurate description of the stock ownership heretofore described.

7. The Electric Bond & Share Company has owned and now owns approximately the percentages of the total outstanding voting securities of the American Gas & Electric Company, Electric Power & Light Company and National Power & Light Company hereinbefore stated. Stockholders' meetings of such companies have been held annually since their organization, and occasionally special meetings have been called for the approval of security issues, agreements or consolidations and similar matters requiring stockholders' approvals. Calls or notices and proxies for those meetings were authorized by the respective boards of directors of these companies and the personnel of the proxies were suggested to such directors by the respective officers of such companies. The respective secretaries of these companies sent out such notices and proxies. At the stockholders' meetings of these companies, Bond and Share has voted the stocks of such companies [fol. 4262] owned by it through the proxies designated as above described. Exhibit B, consists of tables showing, for the past five years, the number of shares voted in person and by proxy at the stockholders' meetings of these companies and the number of shares voted by Bond and Share. During such years, Bond and Share has voted the following approximate percentages of the total number of shares of stock represented at such meetings: National Company, 62%, Electric Company, 77%, American Gas & Electric Company, 25%. Throughout the history of the companies, there has been no instance in which there has been any contest over proxies or in which any interests hostile to the respective managements have organized opposition to the

DEFENDANTS' EXHIBIT No. 135

programs or policies of the respective managements or to the election of directors voted for by proxies designated by such managements.

8. The Commonwealth & Southern Corporation owns one hundred per cent (100%) of the outstanding voting securities of the original complainants, Georgia Power Company, Alabama Power Company, and Mississippi Power Company and approximately ninety-nine per cent (99%) of the total outstanding voting securities of the complainant Tennessee Electric Power Company.

One hundred per cent of the shares of the Southern Tennessee Power Company are owned by the Commonwealth & Southern Corporation.

Baker, Hostetler, Sidlo & Patterson, Trabue, Hume & Armistead, Frantz, McConnell & Seymour, by Charles D. Snapp, Solicitors for Complainants.
John Lord O'Brien, Solicitor for Defendants.

HHF:DD:MC.

[fol. 4263] Amendment to Stipulation of September 14, 1937

It is agreed that the stipulation filed in this cause on August —, 1937, be amended by striking therefrom all of Section 8 thereof and inserting in lieu of said Section 8 *thereof and inserting in lieu of said Section 8* the following:

"8. The Commonwealth & Southern Corporation owns 100% of the Common Stock of the original complainants Alabama Power Company, Georgia Power Company and Mississippi Power Company and approximately 99% of the total outstanding Common Stock of the complainant The Tennessee Electric Power Company and considering also the preferred stocks of said companies which have voting power, owns voting securities which represent the following percentages of the total outstanding voting securities of each of said companies as follows:

"Alabama Power Company	91.40%
"Georgia Power Company	100%
"Mississippi Power Company	100%
"The Tennessee Electric Power Company	64.43"

DEFENDANTS' EXHIBIT No. 135

"100% of the shares of the Southern Tennessee Power Company are owned by The Commonwealth & Southern Corporation."

[fol. 4264] **DEFENDANTS' EXHIBIT No. 136**

Stipulation

It is hereby stipulated and agreed by and between the parties hereto, by their respective solicitors, as follows:

1. That the map attached hereto as Exhibit A, designated "Lines and Substations of the Tennessee Valley Authority in Service, under Construction, and Authorized," represents accurately all the transmission lines, rural lines, and substations of the Authority as of October 15, 1937.
2. That the table attached hereto as Exhibit B, entitled "Transmission Lines of Tennessee Valley Authority," correctly states the facts shown thereon.
3. That the table attached hereto as Exhibit C, entitled "Substations of Tennessee Valley Authority," correctly states the facts shown thereon.
4. That the map attached hereto as Exhibit D, designated "Rural Lines Owned by Municipalities and Cooperatives Purchasing Power from TVA and Rural Lines Owned by TVA," is an accurate representation as of October 15, 1937, of the rural lines owned by the municipalities and cooperative associations purchasing power from the Authority (except the North Georgia Electric Membership Corporation) and the rural lines owned by the Authority.
5. That the tables attached hereto as Exhibit E, entitled "Rural Lines Owned by Municipalities and Cooperatives and Rural Lines Owned by TVA," correctly state the facts shown thereon.

Each of the parties specifically reserves the right to object to the introduction of any of the facts stipulated above on the ground of materiality or relevance.

Charles M. Seymour, Solicitors for Complainants.

John Lord O'Brien, Solicitors for Defendants.

DEFENDANTS' EXHIBIT No. 136

NOTE:

Exhibit "A" to Defendants' Exhibit No. 136 is the same as Defendants' Exhibit No. 136A.

Exhibit "D" to Defendants' Exhibit No. 136 is the same as Defendants' Exhibit No. 136B.

[fol. 4265]

Transmission Lines of Tennessee Valley Authority

October 15, 1937

Line	Length Miles	Circuit Voltage KV	Operating at less than Circuit Voltage KV	Conductor Size and Material	Date of Transfer
I. Lines Transferred to or Purchased by Authority:					
A. Transferred by War Department:					
Wilson-Reservation Boundary (Connection to Alabama Power Company's Gorgas Line)....	2.5	154		250,000 cm Cu.	
Wilson-Reservation Boundary (Connection to Alabama Power Company's Huntsville Line)..	2.5	154	110	250,000 cm Cu.	
Wilson-U. S. Nitrate No. 2-A Line.....	1.4	154	110	300,000 cm Cu.	
Wilson-U. S. Nitrate No. 2-B Line.....	1.4	154	110	300,000 cm Cu.	
Total Miles.....	7.8				
B. Purchased from Alabama Power Company—Contract January 4, 1934					
Decatur, Ala.-Athens, Ala.....	20.8	44		No. 4 Cu.	6-1-36
Decatur, Ala.-Decatur Primary.....	1.9	44		No. 1 Cu.	6-1-36
Decatur, Ala.-Cedar Lake Junction.....	5.1	44		No. 4 Cu.	6-1-36
Decatur, Ala.-Hartselle.....	12.5	44		No. 4 Cu.	6-1-36
Hobgood-Miss. State Line.....	28.5	44		No. 1 Cu.	6-1-36
Hobgood-Moulton.....	25.6	44		No. 4 Cu.	6-1-36
Hobgood-Rockwood.....	24.7	44		No. 2 Cu.	6-1-36
U. S. Nitrate No. 2-Florence.....	3.0	44		2/0 Cu.	6-1-36
Wilson-Hobgood.....	5.5	44		No. 1 Cu.	6-1-36
Red Bay-Miss. State Line.....	1.3	22		No. 6 H.D. Cu.	6-1-36
Total Miles.....	128.9				

DEFENDANTS' EXHIBIT No. 136

Sheet 2 of 4—Exhibit B

Transmission Lines of Tennessee Valley Authority—October 15, 1937—Continued

[fol. 426c]

Lines	Length Miles	Circuit Voltage KV	Operating at less than Circuit Voltage KV	Conductor Size and Material	Date of Transfer
C. Purchased from Mississippi Power Company—Contract January 4, 1934					
Burnsville-Booneville	19.0	44		No. 2 Cu.	6-1-34
Burnsville-Corinth	14.1	44		No. 2 Cu.	6-1-34
Iuka-Burnsville	9.0	44		No. 2 Cu.	6-1-34
Miss. State Line-Iuka	5.0	44		No. 1 Cu.	6-1-34
Tupelo-Okolona	17.2	44		2/0 ACSR	6-1-34
Golden-Fulton	23.0	22		No. 6 H.D. Cu.	6-1-34

II. Lines Constructed by Authority:

A. Plant Tie Lines					
Wilson-Wheeler.....	16.0	44		397,500 cm ACSR	1-10-34
Wilson-Pickwick.....	45.2	154	110	397,500 cm ACSR	9-26-35
Wheeler-Norris.....	218.1	154		636,000 cm ACSR	7-28-36
Wilson-Wheeler.....	15.3	154		636,000 cm ACSR	7-28-36
Wheeler-Guntersville.....	65.1	154		636,000 cm ACSR	12-14-36
Watts Bar-Chickamauga.....	47.9	154	44	636,000 cm ACSR	2-2-37
Total Miles.....	407.6				
B. Other Lines:					
Amory-Okolona.....	13.9	44		2/0 ACSR	9-2-34
Athens, Ala. Fulaski.....	32.8	44		2/0 ACSR	12-1-34
(1) Athens, Tenn. - Dayton (Decatur-Dayton Section)	12.5	44		No. 1 ACSR	2-1-35
(1) Athens, Tenn. - Dayton (Athens-Decatur Section)	12.6	22		No. 1 ACSR	2-1-35
(2) Pickwick-Burnsville.....	16.2	110		4/0 ACSR	2-19-35
(3) Booneville-Tupelo.....	30.0	44		2/0 ACSR	8-25-35
Tupelo-New Albany.....	24.7	44		2/0 ACSR	3-23-36
New Albany-Tuguenor.....	3.4	44		No. 2 ACSR	4-6-36
Columbia-Dickinson.....	36.4	44		2/0 ACSR	5-12-36

Pulaski-Columbia.....	33.8	44	2/0 ACSR No. 2 ACSR	6-12-36 9-15-36
Potts Camp-Holly Springs.....	13.6	12	4/0 ACSR	7-18-36
Pickwick-Jackson.....	51.1	110	2/0 ACSR	7-20-36
Jackson-Bolivar.....	27.1	44	No. 2 ACSR	7-25-36
Bollivar-Somerville.....	23.6	12	250,000 cm Cu.	8-6-36
Columbia-Monsanto #1 Line.....	5.2	44	397,500 cm CCSR	12-14-36
Wheeler-Columbia.....	63.8	154	4/0 ACSR	12-24-36
Burnsville-Tupelo.....	46.0	110	2/0 ACSR	12-31-36
Santee-Hiwassee.....	34.0	44	2/0 ACSR	2-2-37
Chickamauga-Friendship.....	10.2	44	250,000 cm Cu.	4-17-37
Columbia-Monsanto #2 Line.....	5.3	44	636,000 cm ACSR	5-20-37
Norris-Alcoa.....	33.9	154	636,000 cm ACSR	8-18-37
Pickwick-Memphis (Not Energised).....	102.2	154	4/0 ACSR	9-13-37
Tupelo-Pontotoc (Not Energised).....	19.4	44		
Total Miles.....	655.3			

Construction Begun
7-27-37
9-15-37
10-1-37
11-7-37

Jackson-Milan-Trenton.....	36.4	44	2/0 ACSR	636,000 cm ACSR
Norris-Knoxville.....	20.8	110	397,500 cm ACSR	2/0 ACSR
Tie to Arkansas Power & Lt.....	4.9	110	397,500 cm ACSR	2/0 ACSR
Columbia-Victor.....	17.0	44	397,500 cm ACSR	Not known
Total Miles.....	79.1			

636,000 cm ACSR
2/0 ACSR
2/0 ACSR
Not known

III. Lines Under Construction (Partially Complete):

Jackson-Milan-Trenton.....
Norris-Knoxville.....
Tie to Arkansas Power & Lt.....
Columbia-Victor.....

IV. Lines Authorized by Board of Tennessee Valley Authority:

Chickamauga-Guntersville (Plant Tie Line) ...
Columbia-Murfreesboro.....
Pulaski-Fayetteville.....
S. Memphis-N. Memphis.....

154
44
44
110

- (1) Initial operation 22 KV from Athens. After 8-21-37, 44 KV from Decatur to Dayton, Athens-Decatur section not operating.
- (2) Initial service to Pickwick Dam at 44 KV. After 8-15-37, 110 KV.
- (3) Purchased pole line. 44 KV added in space originally provided for it.

DEFENDANTS' EXHIBIT No. 136

Sheet 1 of 5—Exhibit C

Substations of Tennessee Valley Authority

October 15, 1937

4180

Name	Location	Capacity KVA	Primary Voltage KV	Date of Completion
I. Substations Constructed:				
Amory.....	Amory, Miss.	1,500	44	9-2-34
Pulaski.....	Pulaski, Tenn.	1,500	44	1-4-35
(1) Dayton.....	Dayton, Tenn.	600	44	2-1-35
(2) Dam Construction.....	Pickwick Dam, Tenn.	7,500	110	2-19-35
Okolona.....	Okolona, Miss.	1,500	44	7-14-35
44 KV.....	Wilson Dam, Ala.	15,000	46	7-28-35
Ardmore.....	Ardmore Tenn. State Line	450	44	10-1-35
Dickson.....	Dickson, Tenn.	1,200	44	5-12-36
Holly Springs.....	Holly Springs, Miss.	600	12.45	5-15-36
Bolivar.....	Bolivar, Tenn.	300	12.45	7-18-36
Milan.....	Milan, Tenn.	750	12.45	7-18-36
Somerville.....	Somerville, Tenn.	300	12.45	7-18-36
(3) Primary.....	Jackson, Tenn.	10,000	110	8-8-36
(4) Primary.....	Columbia, Tenn.	600	44	12-10-36
Dam Construction.....	Guntersville, Ala.	36,000	154	12-14-36
Santeeelah.....	Santeeelah Plant, N. C.	30,000	154	12-14-36
Dam Construction.....	Hiwassee Dam, N. C.	4,500	44	12-16-36
Friendship.....	Friendship, Ga.	4,500	44	12-31-36
Watts Bar.....	Watts Bar, Tenn.	1,500	44	2-2-37
(5) Primary.....	New Albany, Miss.	15,000	154	2-2-37
Iuka.....	Iuka, Miss.	3,000	44	3-22-36
Colbert.....	Whiten Dam, Ala.	750	44	7-18-37
Primary.....	Burnsville, Miss.	4,500	44	8-12-37
Ford City.....	Ford City, Ala.	13,500	110	8-16-37
Chickamauga Dam, Tenn.	Chickamauga Dam, Tenn.	40	44	9-8-37
		9,000	44	9-12-37

11. Substations Purchased—January 4, 1934 Contract:

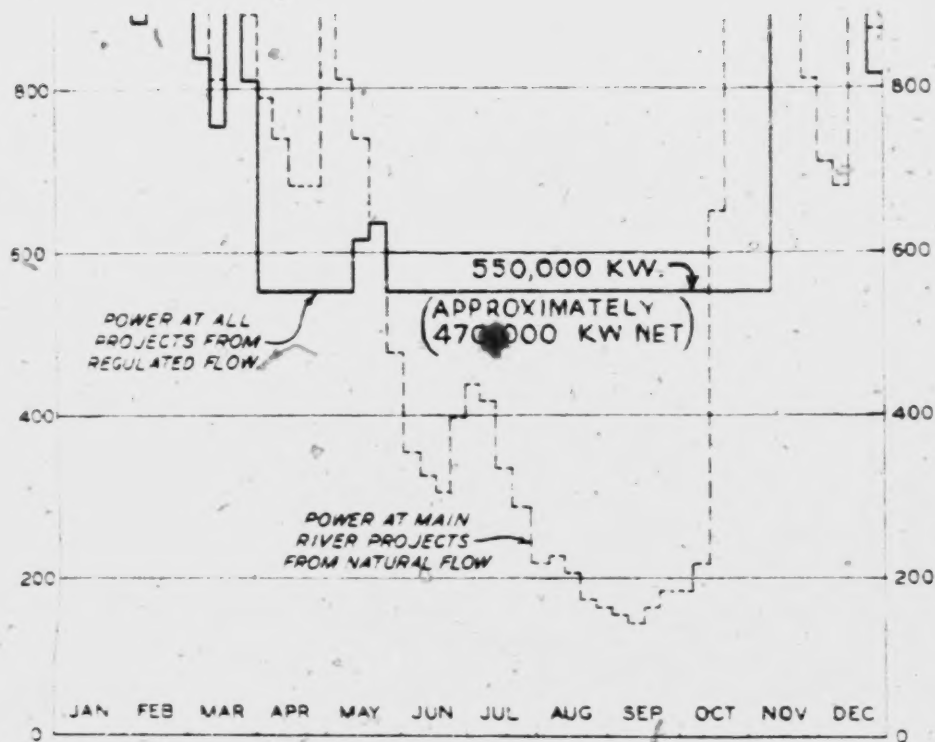
A. Purchased from Mississippi Power Co.:

Booneville.....	1,000	44	6-1-34
(7)Central.....	150	44	6-1-34
(8)Corinth.....	1,200	44	6-1-34
Fulton.....	225	22	6-1-34
Iuka.....	1,000	44	6-1-34
Rienzi.....	150	44	6-1-34
(9)Primary.....	4,500	44	6-1-34
Tupelo.....			

B. Purchased from Alabama Power Co.:

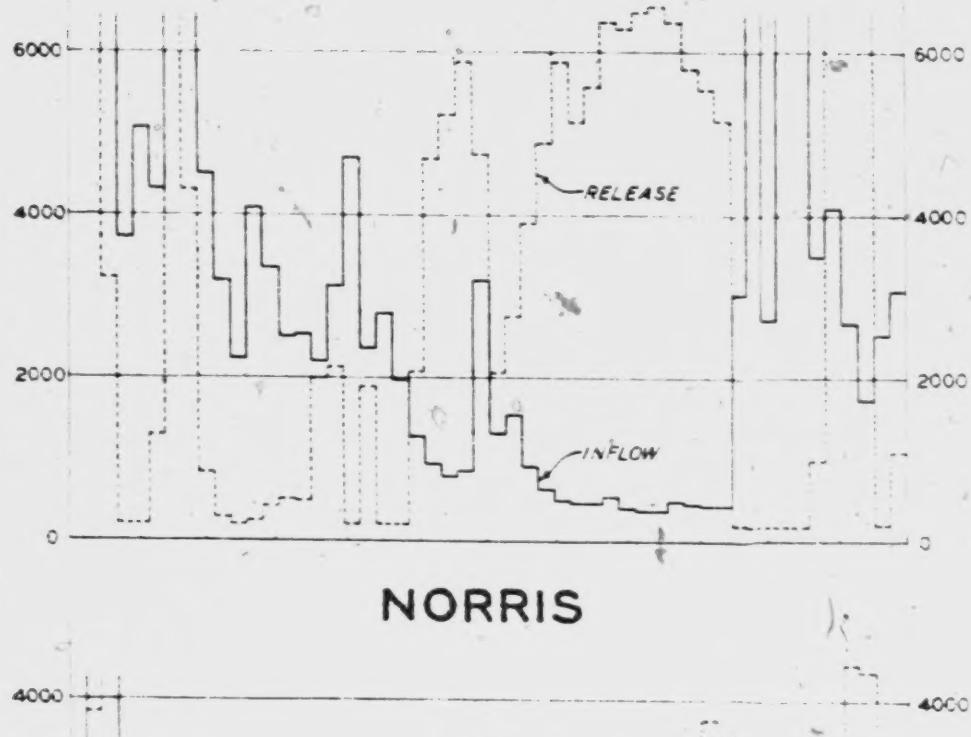
District.....	3,000	44	6-1-36
Central.....	450	44	6-1-36
Central.....	600	44	6-1-36
Colrock.....	600	44	6-1-36
Courtland.....	600	44	6-1-36
Primary.....	7,500	110	6-1-36
Decatur, Ala.....			
Goodyear Mills.....	4,500	44	6-1-36
(10)Central.....	3,000	44	6-1-36
(11)Central.....	4,500	44	6-1-36
(12)Central.....	120	44	6-1-36
Flint, Ala.....	900	44	6-1-36
Decatur, Ala.....	750	44	6-1-36
(13)District.....	1,200	44	6-1-36
(14)Central.....	450	44	6-1-36
Hartselle, Ala.....	600	44	6-1-36
Leighton.....	600	44	6-1-36
Margerum.....	225	22	6-1-36
District.....	1,000	44	6-1-36
Red Bay.....	600	44	6-1-36
Alabama Stone Co.....	3,000	44	6-1-36
Town Creek.....	13,500	110	6-1-36
Waco.....			
U. S. Nitrate No. 2.....			
Wilson Dam, Ala.....			

AVERAGE WEEKLY
THOUSANDS

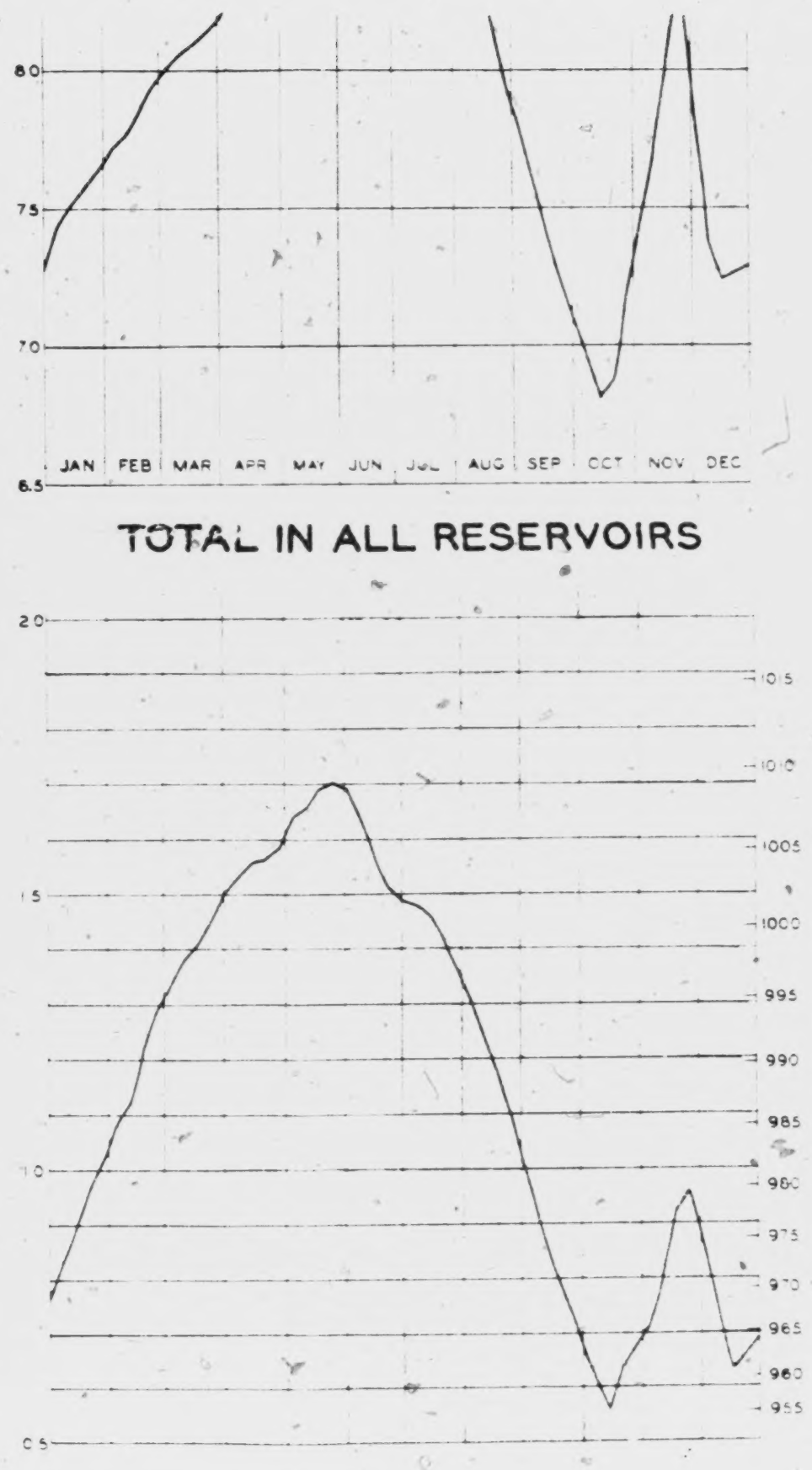


GROSS SYSTEM POWER

AVERAGE WEEKLY FLOW
CUBIC FEET PER SECOND



RESERVOIR CONTENT OF



DEPENDANTS' EXHIBIT No. 136

Sheet 3 of 5—Exhibit C

Substations of Tennessee Valley Authority—October 15, 1937—Continued

[fol. 4271]

Name	Location	Capacity KVA	Primary Voltage KV	Date Removed
C. Purchased from Alabama Power Company but later removed.				
Colrock	Colrock, Ala.	600	44	3-14-37
(12) Central	Flint, Ala.	120	44	9-30-37
U. S. Nitrate No. 2	Wilson Dam, Ala.	13,500	310	3-12-37
III. Substations Under Construction (Partially Completed):				
Trenton	Trenton, Tenn.	3,000	44	Field Work Begun
Knoxville	Knoxville, Tenn.	4,500	110	8-25-37
Primary	S. Memphis, Tenn.	60,000	{154	9-17-37
		20,000	{110	5-14-37
IV. Substations Authorized by Board of Tennessee Valley Authority:				
Fayetteville	Fayetteville, Tenn.	3,000	44	
Murfreesboro	Murfreesboro, Tenn.	1,500	44	
Primary	N. Memphis, Tenn.	20,000	110	
Victor Chemical	Mt. Pleasant, Tenn.	15,000	44	

V. Substations at Generating Plants:

A. Transferred from War Department:

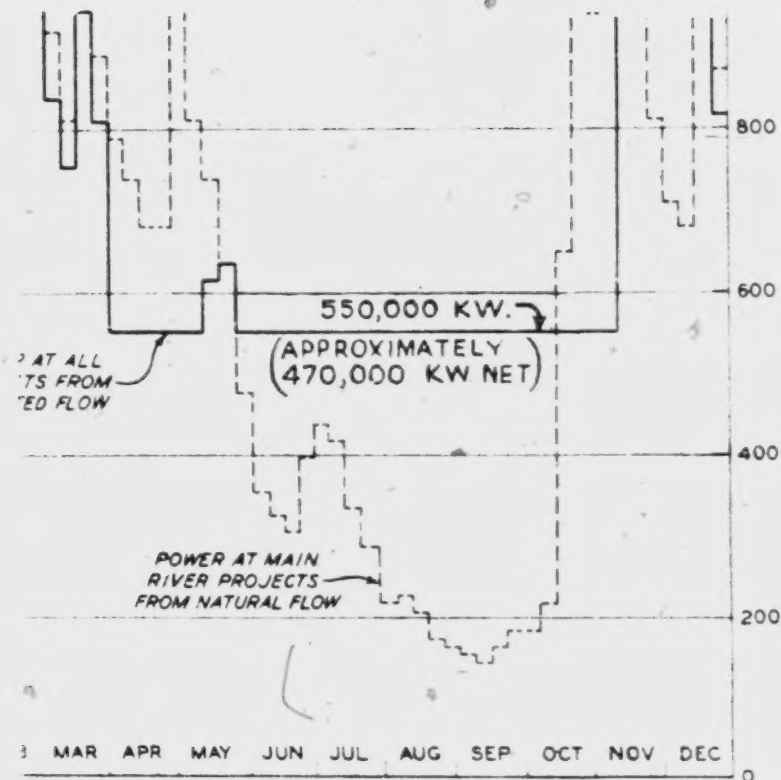
Switchyard.....	Wilson Dam, Ala.....	{ 130,000 130,000	110 154
B. Constructed:			
Switchyard.....	Norris Dam, Tenn.....	112,000	154
Switchyard.....	Wheeler Dam, Tenn.....	72,000	154
C. Under Construction:			
Switchyard.....	Pickwick Dam, Tenn.....	144,000	154
Switchyard.....	Guntersville Dam, Tenn.....	96,000	154
Switchyard.....	Chickamauga Dam, Tenn.....	108,000	154

7-26-36
11-19-36

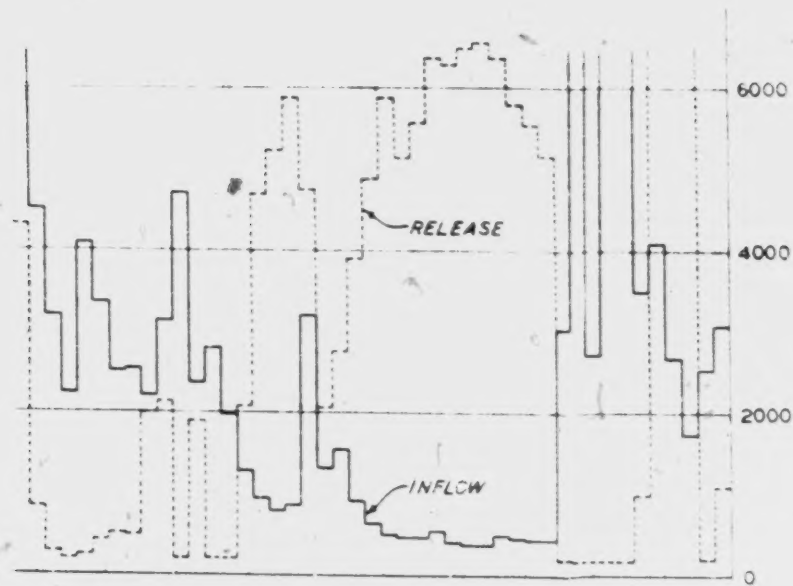
[fol. 4273]

Sheet 5 of 5

- (1) Initial service at 22 KV. Changed to 44 KV 3-21-37.
- (2) Initial service 15,000 KVA. Changed to 7,500 KVA 9-26-37.
- (3) Capacity increased from 5,000 KVA to 10,000 KVA 9-26-37.
- (4) 36,000 KVA capacity self-cooled, being increased to 48,000 KVA by adding air-blast.
- (5) Initial capacity 1,500 KVA changed to 3,000 KVA 3-13-37.
- (6) Not energized.
- (7) Capacity changed to 100 KVA 8-15-37.
- (8) Capacity changed to 5,000 KVA 2-18-36.
- (9) Capacity changed to 6,000 KVA 9-15-35. 110 KV connection with 15,000 KVA of transformer capacity being added to station.
- (10) Capacity changed to 4,500 KVA 4-18-37.
- (11) Capacity of 1500 KVA changed from 12 KV to 44 KV.
- (12) Received 80 KVA only.
- (13) Capacity changed to 1,500 KVA 8-8-37.
- (14) Capacity changed to 1,500 KVA 7-4-37.

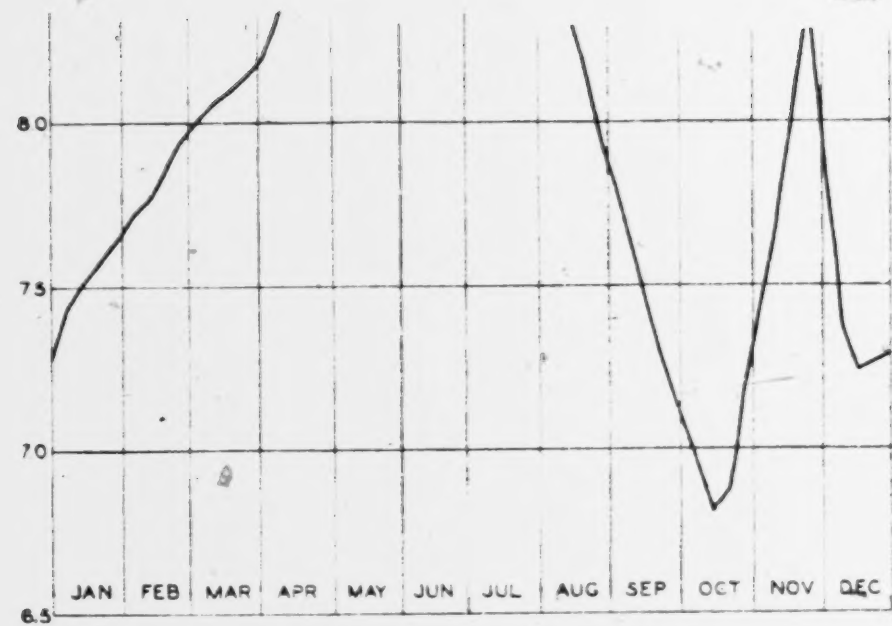


GROSS SYSTEM POWER



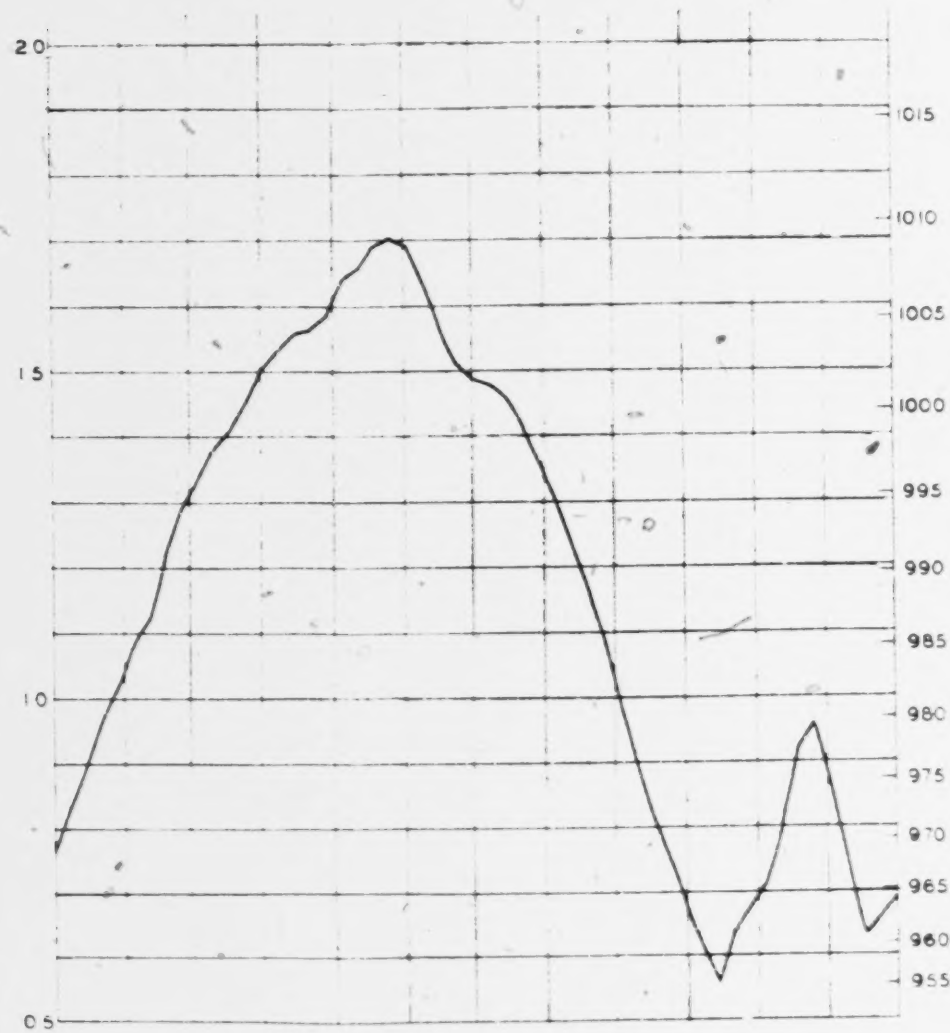
NORRIS

CONTENT



TOTAL IN ALL RESERVOIRS

RESERVOIR OF



(Here follows 1 paster, side folio 4274)



DEFENDANTS' EXHIBIT No. 136

Exhibit E

Rural Lines Owned by Municipalities and Cooperatives*
Purchasing Power from T.V.A.and
Rural Lines Owned by TVA

Number	Municipality or Co-operative carrying on rural service	(1) Total miles of line owned by Municipality or Cooperative as of 10/15/37	(2) Number miles purchased by TVA under Jan. 4, 1934, contract and re-sold to Municipality or Cooperative	(3) Number miles financed and constructed by TVA and sold to Municipality or Cooperative	(4) Number miles constructed by TVA under contract with Municipality or Cooperative	(5) Number of miles constructed by Municipality or Cooperative
I	Gibson Co. EMC.....	245	0	147	98	0
II	Southwest Tenn. EMC.....	287	0	0	287	0
III	City of Bolivar RS.....	12	0	12	0	0
IV	Pickwick EMC.....	97	0	97	0	0
V	City of Pulaski RS.....	28	0	28	0	0
VI	Duck River EMC.....	524	0	151	373	0
VII	Middle Tenn. EMC.....	248	0	0	248	0
VIII	Meigs Co. EMC.....	187	0	0	105	82
IX	City of Dayton RS.....	35	0	35	0	0
X	Holly Springs RS.....	60	0	0	0	60
XI	Alcorn Co. EPA.....	85	14	53	0	18
XII	Tishomingo Co. EPA.....	11	6	5	0	0
XIII	Prentiss Co. EPA.....	41	19	7	0	15
XIV	City of New Albany RS.....	71	25	46	0	0
XV	Tombigbee EPA.....	255	59	196	0	0
XVI	Pontotoc EPA.....	67	23	44	0	0
XVII	City of Okolona RS.....	65	0	0	0	65
XVIII	Monroe Co. EPA.....	128	0	9	67	52
XIX	City of Athens RS.....	137	70	14	53	0
XX	Joe Wheeler EMC.....	173	68	105	0	0
XXI	Cullman Co. EMC.....	191	5	74	112	0
	Totals.....	2,947	289	1,023	1,343	292

Number	Location	Total miles of line owned by TVA as of 10/15/37	TVA Direct Operations Number miles of line purchased by TVA	Number miles of line constructed by TVA
A	Wilson Dam Vicinity.....	314	60 (from Ala. Pr. Co. under Jan. 4, 1934 contract)	254
B	Lincoln Co., Tenn.....	165	0	165
C	Norris Dam Vicinity.....	107	8 (from TEP Co.)	99
D	Supply Lines only (Shown also on Exhibits A and B).....	43.7	0	43.7
	Totals.....	629.7	68	561.7

Total miles of line purchased by TVA and sold to Municipalities or cooperatives.....	289
Total miles of line purchased by TVA—Direct Operations.....	68
Total miles of line financed and constructed by TVA—Direct Operations.....	561.7
Total miles of line constructed by Municipality or Cooperatives.....	292
Total miles of line financed and constructed by TVA and sold to Municipalities or Cooperatives.....	1,023
Total miles of line constructed by TVA under contract with Municipalities or Cooperatives.....	1,343
Grand Total.....	3,576.7*

Note: Of the total mileage shown aggregating 3,576.7* miles, approximately 490* miles were under construction as of October 15, 1937.

* Exclusive of rural lines owned by North Georgia Electric Membership Corporation.

[fol. 4275] DEFENDANTS' EXHIBIT No. 136a

Map entitled "Lines and Substations of Tennessee Valley Authority In Service, Under Construction And Authorized".

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 136b

Map entitled "Rural Lines Owned By Municipalities and Cooperatives Purchasing Power From TVA and Rural Lines Owned By TVA".

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 137

Map entitled "Lines and Substations of Tennessee Valley Authority and Lines and Substations Purchased or Options By Tennessee Valley Authority From Commonwealth & Southern companies".

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 138

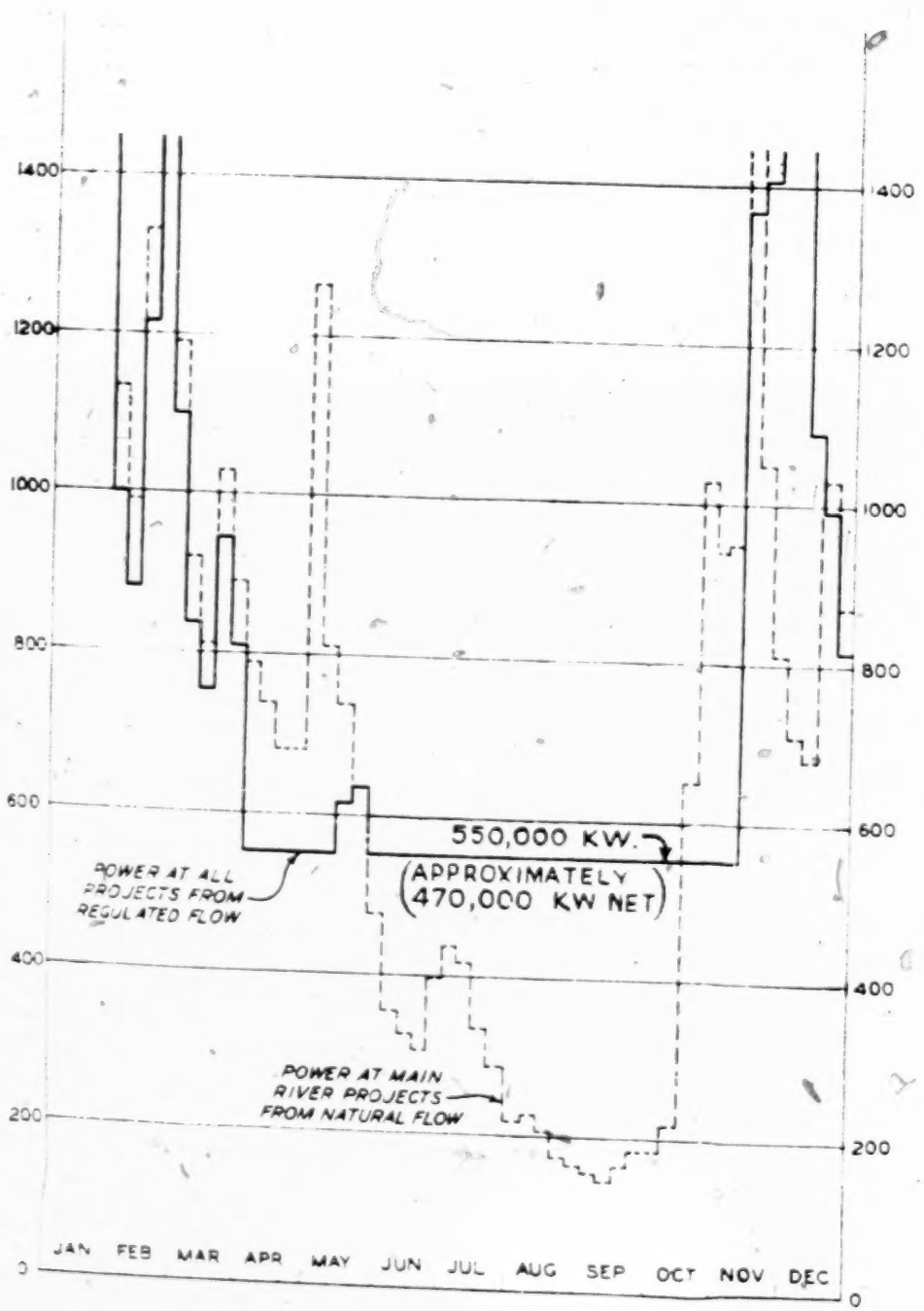
Map entitled "Transmission Facilities of Tennessee Valley Authority and Private Utilities".

(Original Exhibit)

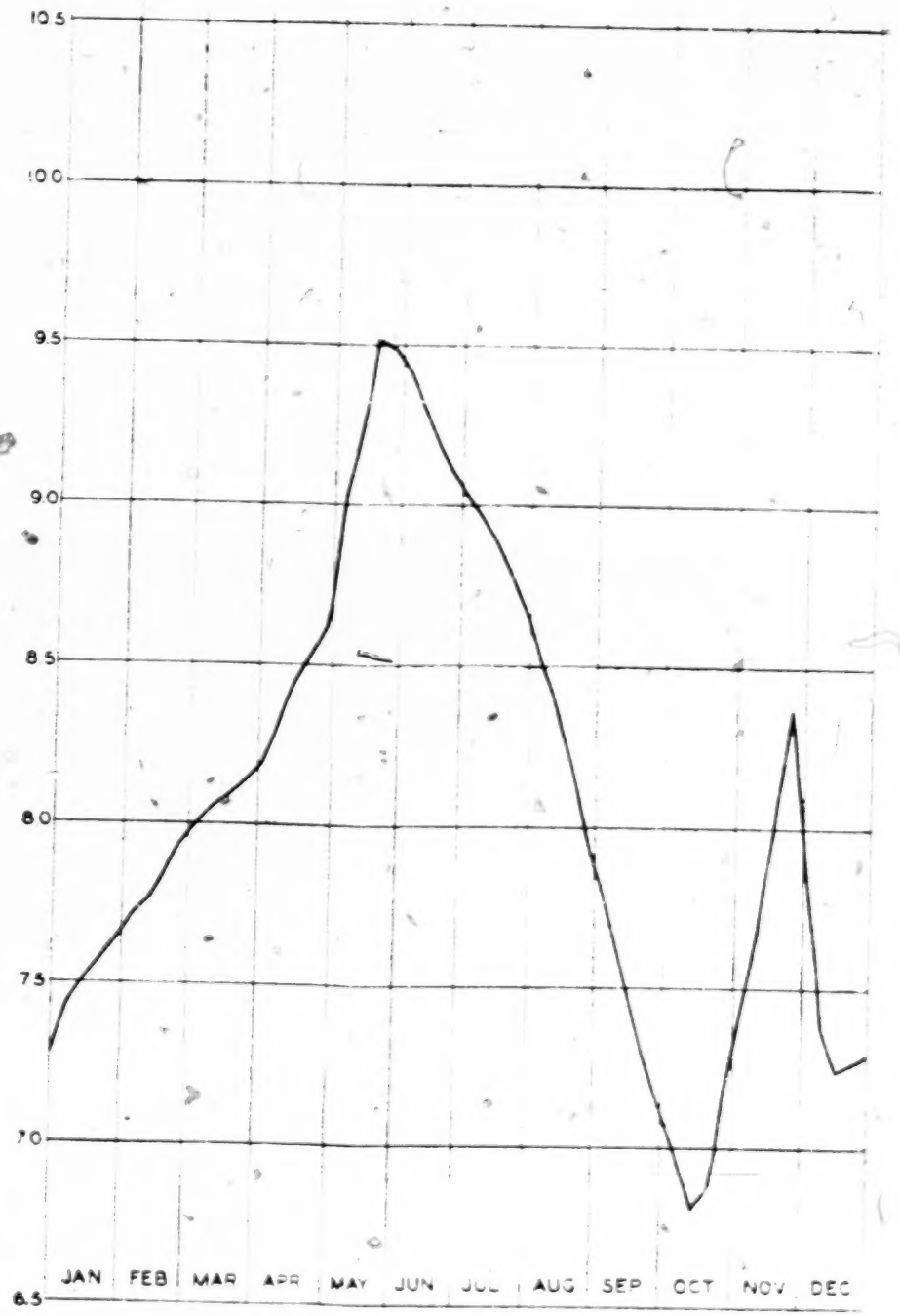
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AVERAGE WEEKLY POWER
THOUSANDS OF KW.



CONTENT
ACRE FEET



TOTAL IN ALL RESERVOIRS

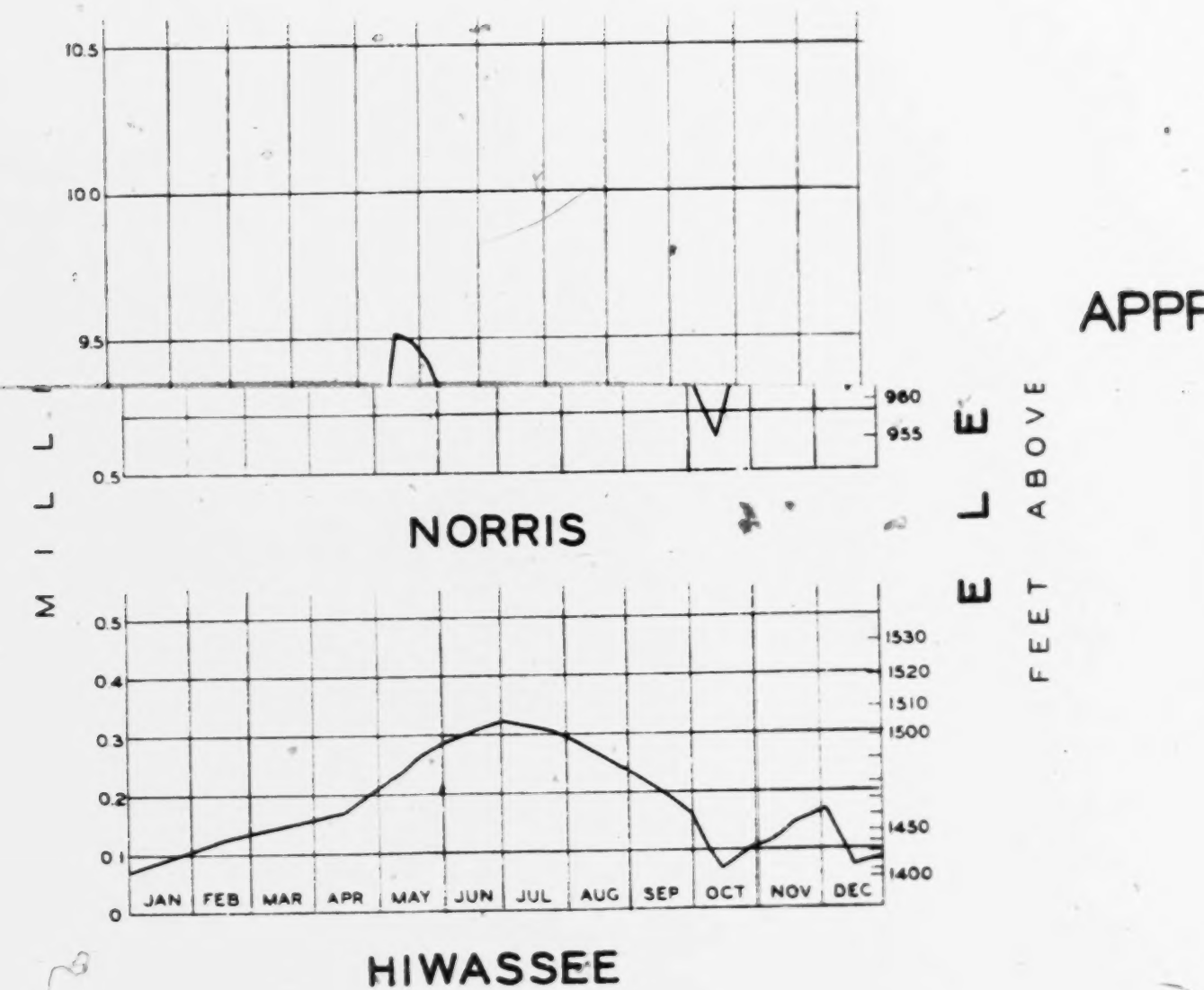
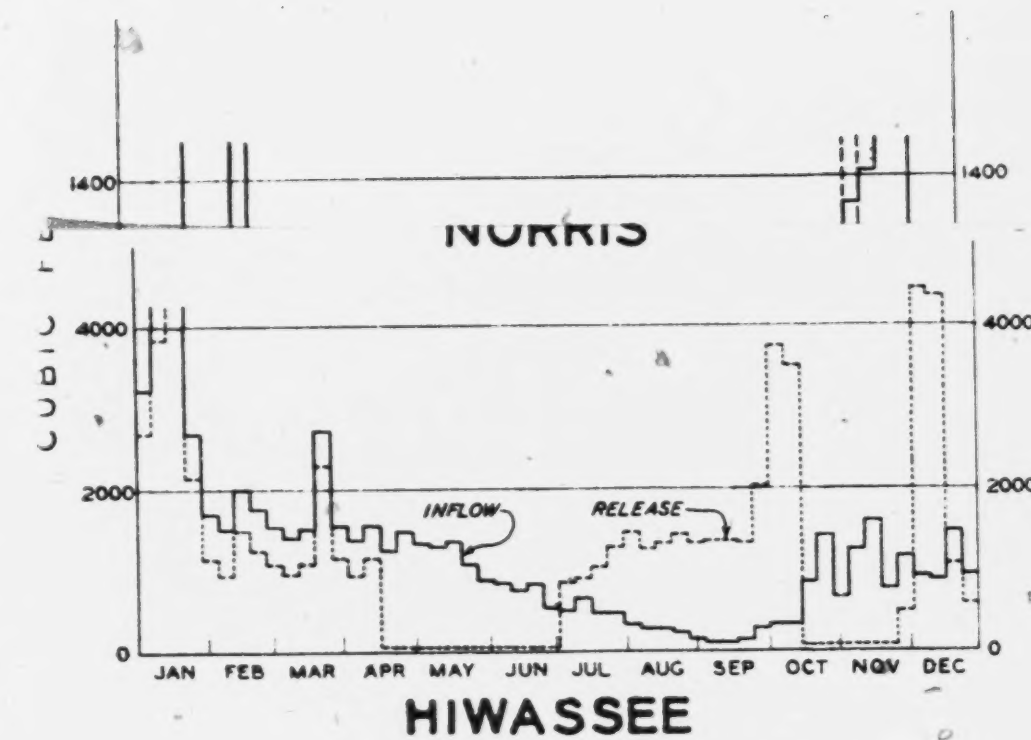
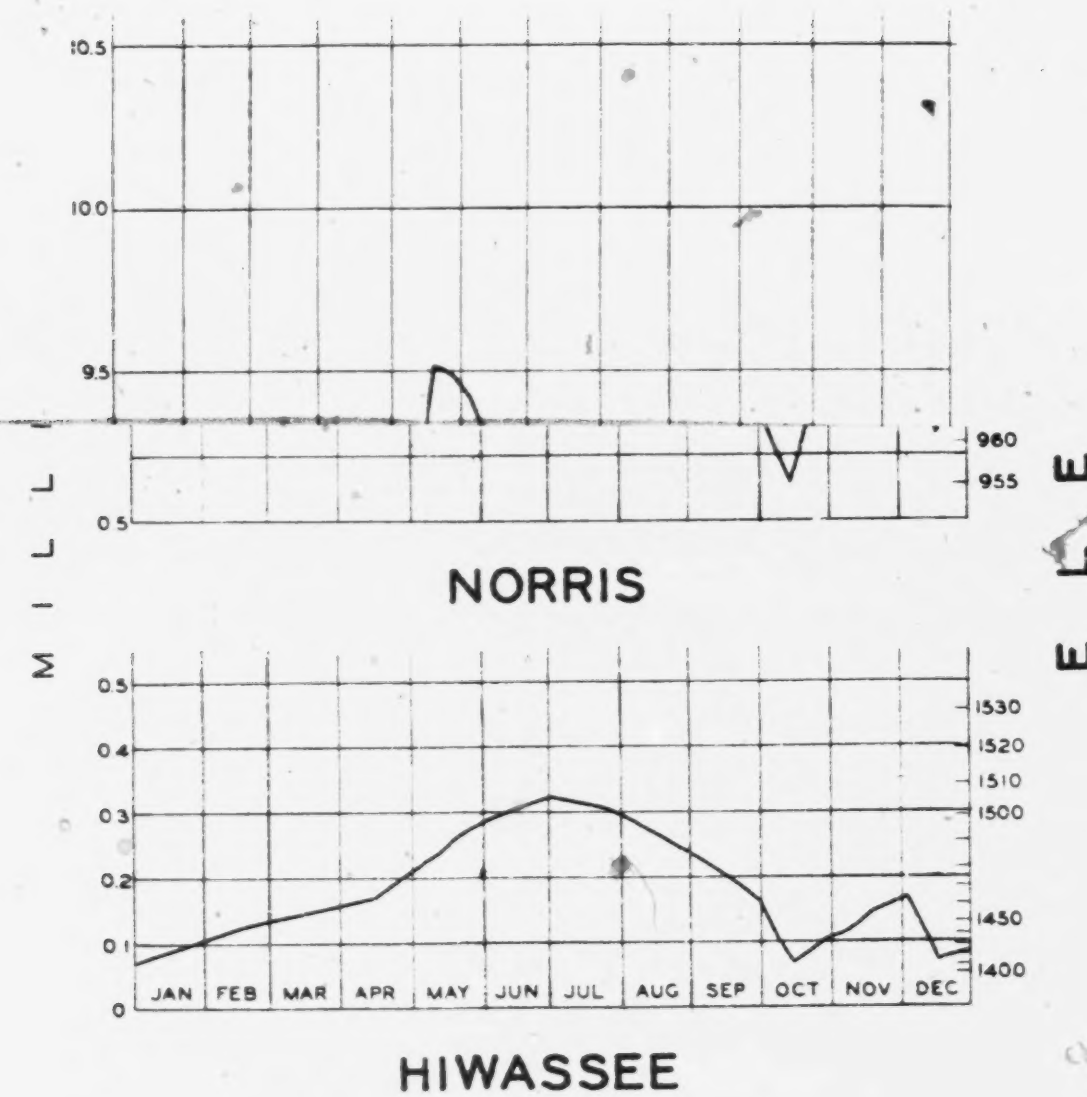
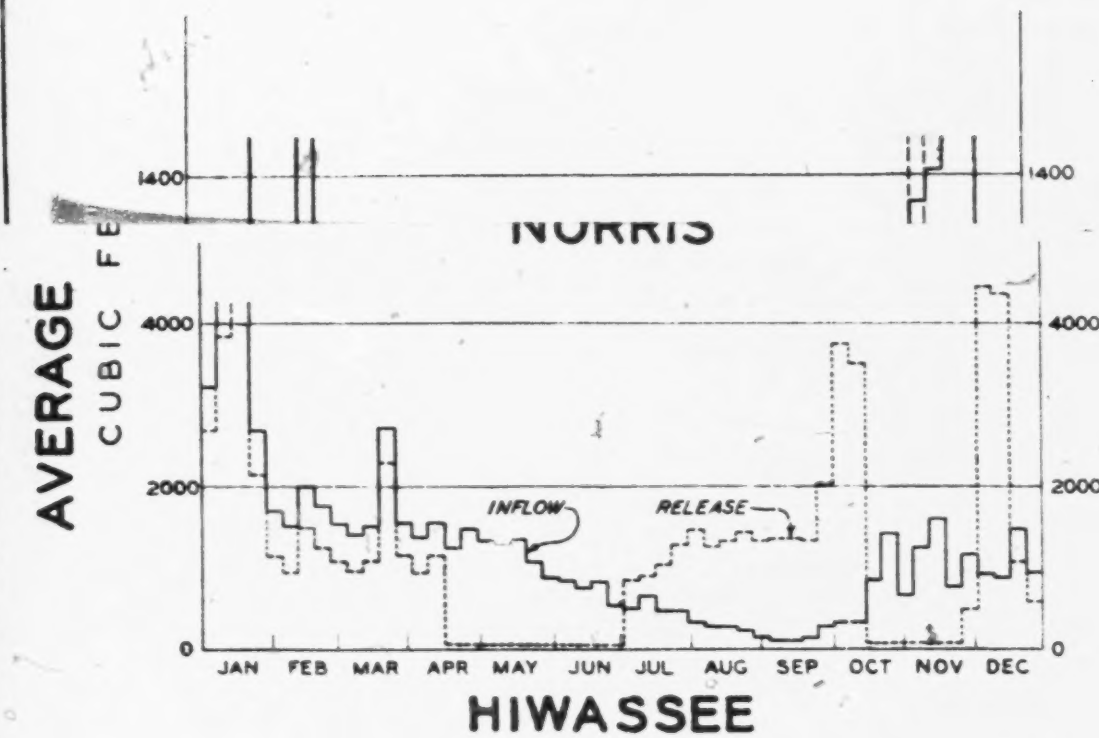
APPROXIMATE SYSTEM OPERATION DRY YEAR LIKE 1925

PROJECTS INCLUDED IN SYSTEM

GILBERTSVILLE
PICKWICK
WILSON
WHEELER
GUNTERSVILLE
CHICKAMAUGA
WATTS BAR
COULTER SHOALS
NORRIS
HIWASSEE

MAY JUN JUL AUG SEP OCT NOV DEC

ALL RESERVOIRS



[fol. 4277] DEFENDANTS' EXHIBIT No. 140

Tennessee Valley Authority

Status of Generating Capacity as of December 31, 1937

Generating Units in Operation

Project	No. of Units	Capacity of each unit KW
Wilson.....	4 }	20,000 }
Norris.....	4 }	26,000 }
Wheeler.....	2	50,000
	2	32,000

Generating Units being Installed

Pickwick.....	2	36,000
---------------	---	--------

Generating Units under Contract

Guntersville.....	2	24,000
Chickamauga (a).....	2	27,000

Future Generating Units Authorized by Board

Guntersville.....	1	24,000
Chickamauga.....	1	27,000
Hirvance.....	1	80,000
Wheeler.....	2	32,000

(a) Generators not purchased.

[fol. 4278] DEFENDANTS' EXHIBIT No. 141

Successive Steps of Installation and
Estimated Firm Power Capacity

Generating Unit	Scheduled Completion Date	Installed Capacity KW	Estimated Firm Power Capacity KW
Wilson #1 to 8.....	Existing	184,000	
Norris #1 & 2.....	Existing	100,000	
Wheeler #1 & 2.....	Existing	64,000	
Total.....		348,000	258,000
Pickwick #1.....	July 1, 1938	36,000	
Total.....		384,000	325,000
Pickwick #2.....	Sept. 1, 1938	36,000	
Total.....		420,000	355,000
Guntersville #1 & 2.....	Jan. 1, 1940	48,000	
Total.....		468,000	395,000
Guntersville #3.....	June 1, 1940	24,000	
Total.....		492,000	410,000
Chickamauga #1.....	Aug. 1, 1940	27,000	
Total.....		519,000	425,000
Chickamauga #2.....	Nov. 1, 1940	27,000	
Total.....		546,000	440,000
Chickamauga #3.....	Jan. 1, 1941	27,000	
Total.....		573,000	460,000
Wheeler #3.....	June 1, 1941	32,000	
Hiwassee #1.....	June 1, 1941	60,000	
Total.....		665,000	540,000
Wheeler #4.....	Aug. 1, 1941	32,000	
Total.....		697,000	570,000

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Estimated
Firm Power
Capacity
KW

[fol. 4279]

DEPENDANTS' EXHIBIT No. 142

Sheet 1

Water Releases at Norris, Wheeler and Wilson Dams

June, 1936 Through November, 1937

Comparison of Total Discharges with Discharges Available for Generation

Month and Year	Norris Dam			Wheeler Dam			Wilson Dam		
	Total Discharge Below Dam D.S.F.—See Note	Estimated Dis- charge Available for Generation D.S.F.*	Percentage of Total Discharge %	Total Discharge Below Dam D.S.F.	Estimated Dis- charge Available for Generation D.S.F.*	Percentage of Total Discharge %	Total Discharge Below Dam D.S.F.	Estimated Dis- charge Available for Generation D.S.F.*	Percentage of Total Discharge %
June, 1936.....	43,280	.....**	.....	.....	.....	.....	423,900	423,900	100.00
July.....	34,790	16,660	47.89	.....	.....	.....	859,180	695,970	81.00
August.....	89,220	80,270	89.97	.....	.....	.....	522,940	522,940	100.00
September.....	134,460	116,480	86.63	.....	.....	.....	495,700	495,700	100.00
October.....	29,700	29,700	100.00	.....	.....	.....	618,290	607,560	98.26
November.....	73,100	73,100	100.00	575,290	209,000***	36.33	573,430	573,430	100.00
December.....	57,090	55,440	97.11	1,070,340	259,510	27.04	1,121,430	734,410	65.49
Total for 7 Months.....	461,640	371,650	80.51	1,645,830	498,510	30.29	4,614,870	4,053,910	87.84
January, 1937.....	4,530	4,530	100.00	5,326,780	294,500	5.53	5,600,360	930,600	16.61
February.....	560,360	198,360	35.40	3,119,090	266,000	8.53	3,181,260	810,000	25.46
March.....	225,710	152,060	67.37	1,654,850	294,500	17.80	1,707,710	842,400	49.33
April.....	10,340	10,340	100.00	1,074,980	446,500	41.53	1,126,170	716,080	63.58
May.....	15,130	15,130	100.00	1,873,930	589,000	31.43	2,002,510	849,150	42.40
June.....	91,050	91,050	100.00	685,980	560,610	81.72	729,060	684,950	93.95
July.....	86,180	86,180	100.00	615,950	484,080	78.59	640,040	602,340	94.11
August.....	80,500	80,500	100.00	660,730	540,550	81.81	661,860	679,510	98.21
September.....	108,630	108,630	100.00	664,340	527,040	79.33	656,670	644,120	98.09
October.....	192,300	176,400	91.73	897,740	548,780	61.13	898,620	686,930	76.44
November.....	322,120	229,430	71.22	687,670	555,920	80.84	700,540	685,460	97.85
Total for 11 Months.....	1,696,850	1,152,610	67.93	17,262,040	5,107,480	29.59	17,934,800	8,131,540	45.34

Note: D.S.F.—Day-second-feet. A discharge of one day-second-foot is equal to a discharge of one cubic foot of water per second for twenty-four hours. The monthly totals are the aggregate amounts of water discharged in a month in day-second-feet.

* That part of the total discharge below the dam which could have been passed through the turbines if operated to full capacity, or to the extent permitted by the amount of the releases if such releases were not adequate to operate the turbines at full capacity, at the time water was released.

** The first water released from Norris Reservoir was on June 19, 1936. The first generating unit was placed in operation on July 28, 1936 and the second generating unit was placed in operation on September 30, 1936.

*** The first generating unit at Wheeler Dam was placed in operation on November 9, 1936. The November data shown are from November 9 through 30. The second generating unit was placed in operation on April 14, 1937.

4190

DEFENDANTS' EXHIBIT No. 142

Sheet 2

[fol. 4280]

Water Releases at Norris, Wheeler and Wilson Dams—June, 1936 Through November, 1937—Continued

Comparison of Turbine Discharges with Total Discharges and Discharges Available for Generation

Month and Year	Norris Dam			Wheeler Dam			Wilson Dam		
	Actual Turbine Discharge D.S.F. #	Percentage Turbine Discharge to Total Discharge %	Percentage Turbine Discharge to Discharge Available for Generation %	Actual Turbine Discharge D.S.F. #	Percentage Turbine Discharge to Total Discharge %	Percentage Turbine Discharge to Discharge Available for Generation %	Actual Turbine Discharge D.S.F. #	Percentage Turbine Discharge to Total Discharge %	Percentage Turbine Discharge to Discharge Available for Generation %
June, 1936.....	.....	.....	.....	.....	.....	.....	421,290	99.38	99.38
July.....	8,850	25.44	53.12	.....	.....	.....	636,980	74.14	91.52
August.....	70,250	78.74	87.52	.....	.....	.....	502,400	96.07	96.07
September.....	111,300	82.77	95.55	.....	.....	.....	495,700	100.00	100.00
October.....	28,950	97.47	97.47	.....	.....	.....	469,070	75.86	77.20
November.....	53,740	73.51	73.51	131,620	22.88	62.98	563,730	98.31	98.31
December.....	22,700	39.76	40.95	170,070	15.89	58.74	412,010	36.74	56.10
Total for 7 Months.....	295,790	64.07	79.59	301,690	18.33	60.52	3,501,180	75.87	86.36
January, 1937.....	550	12.14	12.14	5,620	0.10	1.91	249,560	4.46	26.82
February.....	25,750	4.60	12.98	91,450	2.93	34.38	101,620	3.19	12.54
March.....	44,490	19.71	29.26	22,820	1.38	7.75	69,980	4.10	8.31
April.....	9,150	88.49	88.49	97,210	9.04	21.77	101,230	8.99	14.14
May.....	3,190	21.08	21.08	50,180	2.68	8.52	125,490	6.27	14.78
June.....	2,240	2.46	2.46	143,580	20.93	25.61	82,880	11.37	12.10
July.....	40,680	47.20	47.20	201,020	32.64	41.53	121,900	19.05	20.24
August.....	46,620	57.91	57.91	227,750	34.47	42.13	142,990	20.67	21.04
September.....	28,320	26.07	26.07	222,600	33.51	42.23	198,570	30.24	30.83
October.....	38,090	19.81	21.59	179,950	20.04	34.14	169,440	18.85	24.87
November.....	17,810	5.53	7.76	184,470	26.83	33.18	219,150	31.28	31.97
Total for 11 Months.....	256,810	15.14	22.28	1,426,650	8.26	27.93	1,582,810	8.82	19.46

That part of the total discharge below the dam which passed through the water wheels of the generating units.
1-1-38

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DEFENDANTS' EXHIBIT No. 142

[fol. 4281]

Sheet 3

Water Releases at Norris, Wheeler and Wilson Dams—June, 1936 Through November, 1937—Continued

Extent of Use of Norris Storage Releases for Generation at Wheeler and Wilson Dams

Month and Year	Wheeler Dam			Wilson Dam		
	Norris Reservoir Storage Releases D.S.F. ##	Norris Storage Releases Used For Generation D.S.F.	Percentage of Norris Storage Releases Used For Generation %	Norris Reservoir Storage Releases D.S.F. ##	Norris Storage Releases Used For Generation D.S.F.	Percentage of Norris Storage Releases Used For Generation %
June, 1936				8,750	8,750	100.00
July				39,530	13,440	34.00
August				51,830	48,200	93.00
September				105,710	105,710	100.00
October				35,920	27,920	77.73
November	14,320			23,230	20,890	89.93
December	75,890			75,890	46,570	61.36
Total for 7 Months	90,210			340,860	271,480	9.65
January, 1937						
February	309,380			309,380		
March	154,620			154,620		
April						
May						
June	17,120			17,120		
July	41,130	1.120	2.72	41,130		
August	57,090			57,090		
September	57,530			57,530		
October	144,620			144,620		
November	275,430	6.920	2.51	275,430		
Total for 11 Months	1,056,920	8.040	0.76	1,056,920		

Total discharge below Norris Dam less natural flow of Clinch River at the site of Norris Dam. Five to six days has been estimated for the time of water travel between Norris Dam and Wheeler and Wilson Dams.

1-1-38

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[fol. 4282]

Summary of Contracts for the Disposition of Power by TVA as of December 15, 1937

Sheet 1

Contractors	Previous Service	Point of Delivery	Date of Contract	Date of Initial Purchase
Municipalities:				
1. Amory, Mississippi	Municipal Plant	Substation (City Gate)	3- 9-34 (10-15-36)*	9- 2-34
2. Athens, Alabama*	Municipal Distribution System***	" " "	4- 6-34	6- 1-34
3. Bolivar, Tennessee	Municipal Plant	" " "	12-31-35	7-20-36
4. Dayton, Tennessee	Municipal Distribution System***	" " "	9-12-34	2- 1-35
5. Dickson, Tennessee	Municipal Plant	" " "	10-23-35	5-12-36
6. Florence, Alabama*	Alabama Power Company	" " "	3-14-34 (7-6-36)*	7-15-36
7. Holly Springs, Mississippi	Municipal Plant	" " "	11-12-35 (2-2-37)**	5-15-36
8. Jackson, Tennessee	Municipal Plant & WTP & Lt. Co.***	" " "	10-16-35 (9-1-37)*	7-18-36
9. Milan, Tennessee	Municipal Plant	" " "	12-31-35	7-18-36
10. Muscle Shoals City, Alabama*	Municipal Plant	" " "	1-19-35	10-14-33
11. New Albany, Mississippi*	Municipal Plant	" " "	9-13-34 (3-1-37)*	11-12-34
12. Okolona, Mississippi	Municipal Plant	" " "	4-23-35 (3-24-37)**	7-14-35
13. Pulaski, Tennessee	Municipal Plant	" " "	3- 8-34	1- 4-35
14. Sheffield, Alabama*	Alabama Power Company	" " "	3-14-34 (3-16-36)*	3-16-36
15. Somerville, Tennessee	Municipal Plant	" " "	12-31-35	7-25-36
16. Trenton, Tennessee	Municipal Plant	" " "	8-23-37	11-16-37
17. Tupelo, Mississippi*	Municipal Distribution System***	" " "	11-13-33	2- 7-34
18. Tuscumbia, Alabama*	Alabama Power Company	" " "	3-14-34 (3-8-37)*	4- 1-37
Cooperatives				
Previous Service (Wholesale)				
1. Alcorn County EPA*	None x	Substation at Corinth, Mississippi	6- 1-34 (6-30-37)*	6- 1-34
2. Cullman County EMC**	None	Metered at Morgan-Cullman Co. line	8- 4-36	8- 8-36
3. Duck River EMC**	None	Substation at Columbia, Tennessee	10-31-36	5-27-36
4. Gibson County EMC	None	Metered at Madison-Gibson Co. line	8-13-36	8-13-36
5. Joe Wheeler EMC*	None x	Substations at Hartselle and Moulton, Alabama	9-24-37	10- 1-37
6. Lincoln County EMC**	None	Substation at Ardmore, Tennessee	12-11-37	12-11-37
7. Meigs County EMC	None	Substation at Watts Bar	10-14-35	8- 6-36
8. Middle Tennessee EMC**	None	Metered at Midland, Tennessee	8-13-36	12-10-36
9. Monroe County EPA	None	Substation at Amory, Mississippi	7-19-35 (2-14-36)**	2-15-36
10. North Georgia EMC**	None	Substation at Friendship, Georgia	6-15-36	7-17-36
11. Pickwick EMC**	None	Metered at Miss.-Tenn. State Line	8-26-36	4-21-36
12. Pontotoc EPA*	None x	Metered at Pontotoc-Lee Co. Line	2-15-35 (2-12-36)*	3- 1-35
13. Prentiss County EPA*	None x	Substation at Booneville, Mississippi	6-13-35 (12-1-36)*	6-20-35
14. Southwest Tennessee EMC	None	Substation at Jackson, Tennessee	12- 9-36	8- 1-37
15. Tishomingo County EPA*	None x	Substation at Iuka, Mississippi	7-19-35 (6-30-37)*	8-15-35
16. Tombigbee EPA*	None x	Substation at Tupelo, Mississippi	10-19-35	11- 1-35

* Serves territory within "ceded" areas in Mississippi or Alabama described in contract of January 4, 1934.

** Service initiated under 2500 kw. clause of contract of January 4, 1934.

*** Wholesale power supply purchased at City Gate, in Athens, Alabama, from Alabama Power Company; in Dayton, Tennessee, from a local lumber mill; and in Tupelo, Mississippi, from Mississippi Power Company. Industrial customers in Athens and Tupelo with a load over 25 horsepower were served directly by Alabama Power Company and Mississippi Power Company, respectively.

* Date in parenthesis is date of existing contract superseding original contract.

** Date in parenthesis is date of contract modifying or supplementing original contract.

*** Power purchased from the Authority under the earlier contract has been used by the city in replacement of power previously generated by municipally owned generators and used only for municipal water pumping, street lighting, and other municipal uses. The later contract covers a power supply for both municipal purposes and resale.

x Retail service by Mississippi Power Co. or Alabama Power Co. prior to transfer of property to Authority under contract of January 4, 1934.

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[fol. 4283]

Sheet 2

Contractors	Existing Service	Point of Delivery Contemplated	Date of Contract	Date of Initial Purchase
Municipalities (Not yet Purchasing)				
1. Chattanooga, Tennessee	Tennessee Electric Power Company	Substation (City Gate)	6-17-37	
2. Knoxville, Tennessee	Tennessee Public Service Company	" " "	3- 1-34 (2-19-36)*(5-18-36)**	
3. Memphis, Tennessee	Memphis Power & Light Company	" " "	11-23-35	
4. Decatur, Alabama*	Alabama Power Company	" " "	3-14-34	
5. Russellville, Alabama*	Alabama Power Company	" " "	3-13-34	
6. Middlesboro, Kentucky	Kentucky Utilities Company	" " "	7-29-37 (10-20-37)**	
7. Guntersville, Alabama	Alabama Power Company	" " "	5-21-37	
8. Paris, Tennessee	Kentucky-Tennessee L. & P. Co.	" " "	11- 2-37	
Cooperatives (Not yet purchasing)				
Previous Service (Wholesale)				
1. Northeast Mississippi EPA	None	Substation at New Albany, Mississippi	3-26-37 (7-27-37)**	
2. Cherokee County EMC	None	Substation at Crossville, Alabama	11- 2-37	
3. Tippah County EMC*	None	Substation at Ripley, Mississippi	11- 5-37	
Industrials				
Previous Service		Point of Delivery		
1. Alabama Asphaltic Limestone Company*	Alabama Power Company	Substation on Customer's Property	5- 1-36	5- 1-36
2. Goodyear Decatur Mills*	Alabama Power Company	" " "	5- 1-36	5- 1-36
3. Lacey Asphaltic Limestone Company*	Alabama Power Company	" " "	5-13-37	5-18-37
4. L & N Railroad Shops*	Alabama Power Company	" " "	6-22-36	5- 1-36
5. Rockwood Ala. Stone Company*	Alabama Power Company	" " "	6-25-36	5- 1-36
6. Robbins Rubber Company*	Customer Owned Generator	" " "	11- 1-36	12- 4-34
7. Wade & Richey Mining Company*	None	" " "	5- 1-37	4-28-37
8. Monsanto Chemical Company*	None	" " "	5-15-36 (5-16-36) (6-2-36)**	8- 6-36
9. Aluminum Company of America	Customer Owned Generators	" " "	7-17-36 (7-20-37)***	7- 6-37
Industrials (Not yet purchasing)				
Existing Service		Point of Delivery Contemplated		
1. Electro Metallurgical Company*	None	Substation on Customer's Property	8-17-37	6- 1-39
2. Victor Chemical Company	None	" " "	7- 2-37	2- 1-38
3. Sardis Dam (War Department)	None	" at Pontotoc, Mississippi	5-14-37	
Utilities				
1. Arkansas Power & Light Company		Substation on Customer's Property	6-16-37	11-22-37

* Located within "ceded areas" in Mississippi or Alabama described in contract of January 4, 1934.

** Service initiated under 2,500 KW clause of contract of January 4, 1934.

* Date in parenthesis is date of existing contract superseding original contract.

** Date in parenthesis is date of contract modifying or supplementing original contract.

*** Two agreements with the Aluminum Company executed 7-20-37, one amending the earlier agreement of 7-17-36 and the other setting up new and additional power purchase arrangements.

12-22-37

[fol. 4284] DEFENDANTS' EXHIBIT No. 143A

Press Release, Morning Papers, Jan. 5 1934

Tennessee Valley Authority,
New Sprankle Building,
Knoxville, Tennessee

Contract

This contract, made and entered into this 4th of January, 1934, between Tennessee Valley Authority, a corporation organized and existing under and by virtue of the Tennessee Valley Authority Act of 1933, hereinafter called Authority, and Commonwealth & Southern Corporation, a corporation organized and existing under the laws of the State of Delaware, hereinafter called Commonwealth Company; Alabama Power Company, a corporation organized and existing under the laws of the State of Alabama, hereinafter called Alabama Company, Tennessee Electric Power Company, a corporation organized and existing under the laws of the State of Maryland, hereinafter called Tennessee Company, Georgia Power Company, a corporation organized and existing under the laws of the State of Georgia, hereinafter called Georgia Company, and Mississippi Power Company, a corporation organized and existing under the laws of the State of Maine, hereinafter called Mississippi Company, the Alabama Company, Tennessee Company, Georgia Company and Mississippi Company to be hereinafter collectively designated as Power Companies,

Witnesseth:

Whereas, Power Companies, all of which are subsidiaries of commonwealth Company, and Authority, for the mutual benefit of the respective power systems of Power Companies and Authority, desire to enter into an agreement for the interchange of electric power and for certain switching and other services in connection with such interchange as hereinafter specifically set forth; and

Whereas, the electrical system of all Power Companies are interconnected and the interchange arrangement hereinafter agreed upon will benefit each of said Power Com-

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panies whether or not any interchange is made directly with each of said companies; and

Whereas, Alabama Company, Tennessee Company and Mississippi Company desire to sell, and Authority desires to purchase, certain land, buildings and physical properties devoted to the generation, transmission and distribution of electricity, together with certain franchises, contracts and going business as herein specifically set forth; and

Whereas, the parties desire to enter into certain other and further covenants, as herein specifically enumerated:

Now, Therefore, in consideration of the covenants herein mutually entered into, the parties hereto covenant and agree as follows:

1. Mississippi Company covenants and agrees to convey to Authority, its nominee or nominees, promptly upon the execution of this contract, all of its transmission and distribution lines, substations, generating plants and other property (except one certain dam site in Tishomingo County, State of Mississippi, on the Tennessee River) used in connection with the generation, transmission, distribution or sale of electrical energy by it in the Counties of Pontotoc, Lee, Itawamba, Union, Benton, Tippah, Prentiss, Tishomingo and Alcorn in the State of Mississippi, said property being more particularly described in Exhibit A attached hereto and hereby made a part thereof. Authority agrees to pay for such properties on the date of delivery thereof the sum of eight hundred and fifty thousand dollars (\$850,000).

2. Alabama Company covenants and agrees to convey to Authority, its nominee or nominees, immediately upon request, and from time to time as requested, any or all of its low tension (44 kv. or lower) transmission lines, sub-[fol. 4285] stations (including the high tension station at Decatur and the Sheffield steam plant station) and all rural lines and rural distribution systems in the Counties of Lauderdale, Colbert, Lawrence, Limestone, Morgan (excluding the Hulaco area), north half of Franklin (including the town of Red Bay), and the territory in the northern part of Cullman served by a certain line of Alabama Company extending south from Decatur, all in the State of Alabama, said property being more particularly described

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in Exhibit B, attached hereto and hereby made a part hereof. Authority covenants and agrees that when it has taken all of such properties it will pay therefor an aggregate sum of one million dollars (\$1,000,000). Alabama Company further agrees promptly upon the execution of this contract to convey to Authority, its nominee or nominees, all of the real property which it owns within and adjacent to the area known as the Joe Wheeler dam site in the Counties of Lawrence and Lauderdale, in the State of Alabama, said property being more particularly described in Exhibit C, attached hereto and hereby made a part hereof. Authority covenants and agrees to pay an aggregate sum of one hundred and fifty thousand dollars (\$150,000) for such properties. Authority agrees to pay for such properties on the respective dates of delivery thereof at 60.17448% of the respective prices shown for such properties in said Exhibit B, and at 51.81257% of the respective prices shown for such properties in Exhibit C.

3. Tennessee Company covenants and agrees to convey to Authority, its nominee or nominees, immediately upon request, and from time to time as requested, any or all of its transmission and distribution lines, sub-stations, distribution systems and other properties used in connection with the transmission, distribution and sale of electrical energy by it in the Counties of Anderson, Campbell, Morgan (except the lines extending into Morgan County from Harriman), Scott and the west portion of Claiborne, and all of the 66 kv. transmission line from Cove Creek to Knoxville in Knox County, all in the State of Tennessee, being more particularly described in Exhibit D, attached hereto and hereby made a part hereof. Authority agrees to pay for such properties on the respective dates of delivery thereof at 65.91702% of the respective prices shown for such properties in said Exhibit D. Authority covenants and agrees that if and when it takes all of such properties it will pay therefor an aggregate sum of nine hundred thousand (\$900,000) dollars.

4. Power Companies severally covenant and agree that the properties which by this contract they agree to convey to Authority, its nominee or nominees, shall be conveyed free of liens or other encumbrances, except such liens or

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encumbrances as may be specifically recited in the respective exhibits, title being subject to approval of counsel for Authority; and Power Companies severally covenant and agreed to secure any necessary waiver of liens or encumbrances created by any security issue authorized and/or outstanding against the property which they agree to convey. All conveyances by Power Companies shall be by general warranty deed, and title shall be subject only to the liens or encumbrances recited in said exhibits; Provided, however, that Power Companies shall not be required to warrant easements or rights-of-way assigned or transferred hereunder, other than that they validly hold and exercise such easements or rights-of-way, and are free to transfer same to Authority. Any conveyance of property shall include not only the physical property, easements and rights-of-way, but shall also include all machinery, equipment, tools and working supplies set forth in the respective exhibits, and all franchises, contracts and going business relating to the use of any of said properties, without extra charge. Power Companies severally covenant and agree to transfer or secure the transfer of said franchises, contracts and going business, and to transfer said properties with all present customers attached, so far as they are able. Power Companies severally covenant and agree that pending the transfer of any properties to Authority as herein provided, they will maintain such properties in good condition, and expend for such maintenance the amounts normally allowed therefor in their respective budgets.

[fol. 4286] 5. Alabama Company covenants and agrees to convey its urban distribution systems in the above named counties in Alabama, said distribution systems being listed in Exhibit B, to the respective municipalities in or adjacent to which such systems are located, together with all franchises, contract rights, and going business thereto appertaining, when it has agreed with any such municipality on the price to be paid for the same. Alabama Company agrees to make every reasonable effort to come to an early agreement with said municipalities for such sales. In the event that any such municipality is unable to arrive at a satisfactory price after three months of bona fide negotiation with Alabama Company, or if for some other reason the sale of any such system cannot be consummated, Au-

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thority shall have the right to serve such municipality or municipalities irrespective of whether such municipalities have purchased the distribution systems from Alabama Company. Authority covenants and agrees to use its best endeavors to assist in bringing about the purchase of such distribution systems by the respective municipalities at fair prices.

If Authority elects to purchase said transmission systems in said areas prior to the purchase by municipalities of said distribution systems, then Authority agrees to exchange with Alabama Company sufficient electric energy to supply said distribution systems.

6. Tennessee Company covenants and agrees as to any municipal distribution systems in the above named Counties in Tennessee which Authority does not elect to purchase, Tennessee Company will convey such distribution systems to the municipalities in or adjacent to which such systems are located, together with all franchises, contract rights and going business thereto appertaining when it has agreed with any such municipality on the price to be paid for same. Tennessee Company agrees to make every reasonable effort to come to an agreement with said municipalities for such sales. In the event any such municipality is unable to arrive at a satisfactory price after three months of bona fide negotiation with Tennessee Company, or if for some other reason the sale of any such system cannot be consummated, Authority shall have the right to serve such municipality or municipalities irrespective of whether such municipalities have purchased the distribution systems from Tennessee Company. Authority covenants and agrees as to any of said distribution systems which it does not purchase to use its best endeavors to assist in bringing about the purchase of such distribution systems by the respective municipalities at fair prices.

If Authority elects to purchase said transmission systems in said areas prior to the purchase by municipalities of said distribution systems, then Authority agrees to exchange with Tennessee Company sufficient electrical energy to supply said distribution systems.

7. Power Companies covenant and agree that during the period of this contract none of said companies will sell elec-

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tric energy to any municipality, corporation, partnership, association or individual in any portion of the above-described counties or parts thereof in Alabama, Tennessee and Mississippi, in which portions the properties of Power Companies listed in the respective schedules attached hereto have been transferred out of Power Companies in accordance with this contract or in which Power Companies at the time of entering into this contract do not own such properties. During said period Authority will not sell electric energy outside of said counties to any municipality, corporation, partnership, association or individual which, or the distribution system serving which, is now supplied by Power Companies, nor will Authority sell electric energy outside of said counties to the customers of non-utilities supplied by Power Companies; Provided, however, that nothing herein contained shall be construed to prevent Authority from selling electric energy outside of said counties to any municipality or municipalities which, or the distribution system serving which, is not on the date of the [fol. 4287] execution of this agreement being served by Power Companies; and Provided, further, that distribution systems having interchange contracts with Power Companies, or supplied by companies or systems having interchange contracts with Power Companies, shall not within the meaning of this contract be considered as being supplied with electricity by Power Companies, except that Authority shall not have the right to interchange power with any utility operating under an interchange contract with Power Companies; and Provided, further, that nothing herein contained shall be construed to prevent Authority from selling electric energy to rural consumers or organizations thereof, in the counties of Rhea, Roane, Meigs and the western part of McMinn on the so-called plateau, in the State of Tennessee, not now being served by Tennessee Company, and to rural consumers or organizations thereof in Monroe County in the State of Mississippi not now being served by Mississippi Company; and Provided, further, that Authority may serve electric energy to any fertilizer plant or other industry operated by it, without any restriction as to the location thereof; and Provided, further, that in addition to the above described exceptions nothing in this contract shall be construed to prevent Au-

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thority from selling, outside of the five counties or parts thereof above named and the counties named in Sections 1, 2 and 3 of this contract, electric energy up to a total demand of 2500 kw. to customers not at the time served by Power Companies.

8. As a part of the interchange arrangements provided for by this contract, Authority agrees to deliver to Power Companies on demand, at points hereinafter described, all of its surplus hydro-electric power, and Authority agrees to supply not less than 20,000 kw., if Power Companies desire that amount, plus the totalized net demand of Authority on Power Companies at the various exchange points, hereinafter described, plus fifteen per cent of such totalized net demand for line losses; and Power Companies agree to receive and take such power when, as and to the extent required by them. The term "totalized net demand" as used herein shall be construed to mean the aggregate one hour integrated demand of Authority at all exchange points, less the aggregate one hour integrated demand of Power Companies at all exchange points. The term "surplus hydro-electric power" as used herein shall be construed to mean the excess of available water capacity over Authority's own requirements as such may exist from time to time. The decision as to what constitutes excess capacity at any given time shall be in the discretion of the acting Chief Operating Officer of Authority at Wilson Dam at such time; Provided, however, that nothing herein contained shall be construed as a limitation on the obligation of Authority to supply 20,000 kw. to Power Companies, Authority agrees to supply Power Companies on request all data bearing upon water capacity and Authority's requirements.

9. Authority covenants and agrees to supply power to Power Companies at the following points of exchange, and at such other points as the parties may from time to time agree:

(a) At Wilson Dam on the 154 kv. line connecting Gorgas and Nashville;

(b) At Wilson Dam on the 110 kv. line extending from Wilson Dam to Huntsville at the point where the line crosses the southern boundary of U. S. Nitrate Plant No. 2;

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(c) At the point where the 44 kv. line extending from West Point to Tupelo intersects the southern boundary line of Lee County, Mississippi; Provided, however, that Authority shall not be obligated to render service at this point unless and until the line from Tupelo to Wilson Dam is constructed by Authority.

(d) At such other points as may be necessary to comply with the obligations of Authority under this contract to supply distribution systems operated by Power Companies.

[fol. 4288] 10. Power Companies covenant and agree to supply power to Authority at the following points of exchange:

(a) At Wilson Dam on the 154 kv. line connecting Gorgas and Nashville;

(b) At Wilson Dam on the 110 kv. line extending from Wilson Dam to Huntsville at the point where the line crosses the southern boundary of U. S. Nitrate Plant No. 2;

(c) At the point where the 44 kv. line extending from West Point to Tupelo intersects the southern boundary line of Lee County, Mississippi;

(d) At the point where the high-tension substation at Decatur, Alabama, joins the 110 kv. line of the Alabama Company extending from Sheffield to Huntsville;

(e) At or near the point on the 44 kv. line between Huntsville and Decatur where the line crosses the boundary of Limestone and Madison Counties, Alabama;

(f) At a point on the 120 kv. line of the Tennessee Company at or near Cove Creek, Tennessee;

(g) At a point on the 154 kv. line connecting Wilson Dam and Nashville at or near Mount Pleasant, Tennessee;

(h) At such other points on the lines of Power Companies as Authority may from time to time designate for service to any customer which Authority may serve under Section 7 of this contract; Provided, however, that Authority shall pay the whole cost of such additional connections; and Provided, further, that Power Companies shall be under no obligation to render service to an amount in excess of the surplus transmission capacity of the respec-

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tive lines except that Authority may, solely at its own expense, advance funds to the respective Power Companies for increasing the transmission capacity of said lines and that upon being advanced the funds Power Companies shall be obligated to make such increase in transmission capacity; and Provided, further, that Authority shall not have the right under this sub-paragraph to designate any exchange points outside of the Tennessee Valley Basin. Power Companies shall retain title to all improvements thus financed on said lines; Provided, however, that should Authority purchase said lines, the net increase in value because of such improvements shall be deducted from the purchase price.

11. Power Companies covenant and agree that after the expiration of this agreement the interchange arrangement then in effect will be maintained by Power Companies for an additional period (not exceeding eighteen months) sufficient to permit Authority to construct its own transmission facilities for serving all of the territory which it is then serving in whole or in part with power obtained at such interchange points.

12. The cost of installing the necessary apparatus for the exchange of power at Wilson Dam shall be borne in equal part by Authority and Alabama Company. The cost of installation of additional interchange facilities at the remaining points shall be borne by Authority. The cost of operation and maintenance of the interchange facilities at the interchange points described in Section 9 and in subparagraphs (a) to (g), inclusive, of Section 10 hereof, shall be borne equally by Authority and the respective Power Company directly involved, and such operation and maintenance shall be under the general control and direction of Authority and said such Power Company, and shall be effected through joint employees whose compensation shall be equally borne. No such employee shall be continued in service if objected to by either party. The cost and control of the operation and maintenance of the additional [fol. 4289] points of exchange, provided for by Section 10 (h), shall be governed in the same manner except that Authority shall reimburse Power Company for its share of such cost of operation and maintenance.

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13. Power Companies agree to have available at all times for exchange, at each point of exchange, energy and capacity to supply the entire demands of the customers served by Authority from such points of exchange, subject to the limitations as to transmission capacity set forth in Section 10 (b) hereof; Provided, that the maximum amount which Authority shall be entitled to demand at all points of exchange shall be 70,000 kv.

14. In the computation of the obligations for energy interchanged under the terms of this contract, and in the settlements therefor, Power Companies shall act and be treated jointly, through an agent of their own selection, hereinafter called Agent; and Power Companies covenant and agree to select such an agent promptly upon the execution of this contract, and promptly to notify Authority of their selection in writing. Power Companies may jointly designate a new agent from time to time, upon giving Authority three calendar months notice in writing; and such new agent shall succeed to all the rights, duties and obligations of its predecessor. Power Companies hereby waive all recourse against Authority, except through such agent. Power Companies and Commonwealth Company shall, however, be jointly and severally liable for all obligations hereunder pertaining to said interchange arrangements, the establishment and maintenance of exchange points, the amount of energy or capacity to be made available at such points, and the settlement of obligations created thereby, including the payment of quarterly settlements provided for in Section 15, and the monthly payment provided for in Section 16 hereof.

15. Computation of the obligations for energy interchanged under the terms of this contract shall be made on the following basis. Statements shall be rendered to each other by Agent and Authority quarterly. The first statement shall be rendered within ten days after March 31, 1934, for the period beginning with the date of execution of this contract and extending to and including March 31, 1934. Similar statements shall be rendered within ten days after the close of the quarterly calendar periods dating from March 31st thereafter. The statements shall show the amount of energy exchanged at each exchange point

DEFENDANTS' EXHIBIT No. 143A

plus 15 per cent for line losses on the transmission thereof from the point of generation; Provided, however, that line losses shall not be considered in the determination of the amount due Authority for the delivery of energy to Power Companies at the point of generation. Statements shall be computed as per the following example, viz.:

(1) Kilowatt Hours Received by Power Companies from Authority at the point of generation	30,000,000 kwh.
(2) Kilowatt Hours Received by Power Companies from Authority at exchange points other than the point of generation	8,000,000 kwh.
Add 15% for line losses.....	1,200,000 kwh. 9,200,000 kwh.
Total Received by Power Companies.....	39,200,000 kwh.
(3) Kilowatt Hours Received by Authority from Power Companies at exchange points	20,000,000 kwh.
Add 15% for line losses.....	3,000,000 kwh. 23,000,000 kwh.
Difference (2) and (3).....	16,200,000 kwh.

[fol. 4290] and the excess of energy delivered by Power Companies (considered as a unit) to Authority and vice versa, shall be paid for by Agent or Authority, as the case may be, within twenty days after March 31, 1934, or of the close of subsequent quarterly periods as the case may be. The party receiving such excess of energy over the energy delivered in exchange during such period shall pay therefor at the following rates:

First 300,000 Kilowatt Hours per period at 3.6 mills per kwh.

Next 600,000 Kilowatt Hours per period at 2.7 mills per kwh.

Next 2,100,000 Kilowatt Hours per period at 2.25 mills per kwh.

Next 18,600,000 Kilowatt Hours per period at 1.8 mills per kwh.

Next 21,600,000 Kilowatt Hours per period at 1.35 mills per kwh.

Excess Kilowatt Hours per period at 1.08 mills per kwh.

16. In addition to the energy payments hereinbefore provided, Agent agrees to pay monthly to Authority \$16,200

DEPENDANTS' EXHIBIT No. 143A

(1) for the reservation by Authority for the use of Power Companies of the 20,000 kw. of capacity as hereinbefore provided, (2) for the use of the 154 kv. line of Authority on the reservation at Wilson Dam, (3) for the use of other property of Authority required for the interchange of power, (4) and to cover the expense of the switching and voltage regulation by Authority necessary to synchronize its operations with the operations of Power Companies.

17. Tennessee Company agrees to file with the Railroad and Public Utilities Commission of Tennessee, simultaneously with the execution of this contract, schedules of domestic service rates, as follows:

Metered Residential Service

Alternating Current, Single Phase Applicable to any residential service installation located on the Tennessee Electric Power Company's existing alternating current single phase distribution lines within the State of Tennessee

Energy Charge—Net

New "Immediate" Rate	New "Promotional" Rate
6.5¢ per kwh. first 25 kwh.	\$1.00 per month incl. 15 kwh. per month.
5¢ " " next 35 "	4.5¢ " kwh. next 50 "
3¢ " " next 140 "	2¢ " " next 135 "
1.5¢ " " over 200 "	1¼¢ " " next 500 "
	1¢ " " over 700 "

Minimum Bill—\$1.00 per month.

Procedure in Applying New "Immediate" and New "Promotional" Rates

A base bill will be established for each customer as follows:

[fol. 4291] A—For Existing Customers:

The base bill will be the kwh. use for the same month of the year preceding the effective date of the new rates, computed under the new "Immediate" rate.

B—For New Customers:

The base bills for new customers and for those taken on during the 12 months preceding the effective date of the

DEFENDANTS' EXHIBIT No. 143A

new rates will be their first 12 months use computed under the new "Immediate" rate.

Whenever the customer's bill under the new "Immediate" rate is equal to or less than his base bill, the new "Immediate" rate will apply.

Whenever the customer's bill under the new "Promotional" rate is greater than his base bill, the new "Promotional" rate will apply.

Whenever the customer's bill under the new "Immediate" rate will be greater than his base bill but under the new "Promotional" rate will be less than his base bill, the customer will be billed the base bill. No bill under the new "Promotional" rate will be for less than the base bill and no bill under the new "Immediate" rate will be rendered for an amount greater than the base bill.

At the close of the first 12 months of the application of the new rates, all base bills will be reduced 5%. The resultant base bills will be reduced another 5% at the end of 24 months. At the end of 36 months the new "Immediate" rate will be eliminated and the new "Promotional" rate will apply to every residence customer.

Minimum Charge:

\$1.00 per month.

Prompt Payment:

The above are net rates—if bills are not paid within 10 days from the date thereof the gross rate will apply which will be 5% in excess of the above net rates.

Term of Agreement:

From date of connections until disconnected on 30 days written notice of one party to the other or on non payment of bills for service.

18. The parties hereto shall not be liable to each other on account of any interruption of the exchange of power as provided in this contract or any damages resulting therefrom due to strikes, fires, storms, break-downs or other cause beyond their control.

DEFENDANTS' EXHIBIT No. 143A

19. Power Companies and Commonwealth Company covenant and agree to cooperate in the sale of electrical appliances throughout the entire territory served by Power Companies, and to use their utmost endeavors to cooperate with Authority and with Electric Home and Farm Authority, Inc., to promote the sale of electric appliances throughout the Tennessee Valley States served by them.

[fol. 4292] 20. Compliance by Authority with any direction or requirement of the Tennessee Valley Authority Act of 1933 shall not be construed in any way as a violation of the terms of this agreement, nor shall such compliance be construed or urged as a failure or partial failure of consideration hereunder.

21. This contract shall remain in force and effect from the date of the execution hereof until midnight December 31, 1938, or until three months after the completion of Norris Dam power plant, whichever is earlier. Upon completion of said plant, if before October 1, 1938, Authority shall notify Commonwealth Company of such completion and this contract shall terminate three calendar months after the receipt of such notification.

22. Power Companies covenant and agree promptly upon the request of Authority to apply to the respective state public service commissions and other public bodies whose consent or approval is required by law to make effective the several terms of this contract for such consent or approval, and to prosecute such applications with diligence.

23. This contract is executed in sextuplicate, and shall enure to and be binding upon the successors and assigns of the respective parties hereto.

In Witness Whereof the parties hereto have caused this instrument to be signed and sealed by their duly authorized

DEFENDANTS' EXHIBIT No. 143A

officers, and attested under the hand and seal of their respective secretaries.

Commonwealth and Southern Corporation, by
— —, President.

Attest: — —, Secretary.

Alabama Power Company, by — —, President.

Attest: — —, Secretary.

Tennessee Electric Power Company, by — —,
President.

Attest: — —, Secretary.

Mississippi Power Company, by — —, President.

Attest: — —, Secretary.

Georgia Power Company, by — —, President.

Attest: — —, Secretary.

Tennessee Valley Authority, by — —, Chairman.

Attest: — —, Secretary.

[fol. 4293] Exhibit "A"—Sheet 1 of 10 Sheets

January, 1934

Mississippi Power Company
Inventory of Property to Be Conveyed to the Tennessee
Valley Authority

Merchandise and Supplies located as follows:

Corinth	Plantersville
Biggersville	Chesterville
Iuka	Pontotoc
Dennis	Ecu
Booneville	Fulton
Baldwyn	Golden
Tupelo	Belmont
Auburn	Myrtle
East Tupelo	Blue Mountain

[fol. 4294] Exhibit "A"—Sheet 2 of 10 Sheets

January, 1934

Mississippi Power Company
Inventory of Property to Be Conveyed to the Tennessee
Valley Authority

Generating Plants

Corinth Steam Plant—Main building approximately 131 ft. x 75 ft. x 23 ft. consisting of 2 boilers and 3 Turbo-Generators totaling approximately 2,225 KVA capacity, on lot approximately 254 ft. x 193 ft.

Tupelo Steam Plant—Main building approximately 45 ft. x 43 ft. x 33 ft. with 3 boilers and 2 Turbo-Generators totaling approximately 4,375 KVA, on lot of approximately 25,000 sq. ft.

Blue Mt. Oil Engine Plant—Building approximately 24 ft. x 41 ft. x 14 ft. containing 2 Fairbanks-Morse Oil Engines, direct connected to 2 generators totaling approximately 150 KVA capacity, on lot approximately 96 ft. x 120 ft.

Myrtle Oil Engine Plant—Main building 30 ft. x 40 ft. x 18 ft. containing one Fairbanks-Morse Oil Engine direct connected to generator of approximately 75 KVA capacity, on lot approximately 66 ft. x 100 ft.

[fol. 4295] Exhibit "A"—Sheet 3 of 10 Sheets

January, 1934

Mississippi Power Company
Inventory of Property to Be Conveyed to the Tennessee
Valley Authority

Transportation Equipment

Chevrolet $\frac{1}{2}$ Ton Commercial Light Delivery with Closed Cab located at Baldwyn.

Chevrolet $\frac{1}{2}$ Ton Commercial Light Delivery with Closed Cab located at Booneville.

G. M. C. 12,000 pound gross rating truck with winch located at Corinth.

DEFENDANTS' EXHIBIT No. 143A

Chevrolet ½ Ton Commercial Light Delivery with Closed Cab located at Corinth.

Chevrolet ½ Ton Commercial Light Delivery with Closed Cab located at Iuka.

Reo 1½ Ton Truck with Canopy Top located at Tupelo.

Chevrolet ½ Ton Commercial Light Delivery with Closed Cab located at Tupelo.

Chevrolet ½ Ton Commercial Light Delivery with Closed Cab located at Myrtle.

[fol. 4296] Exhibit "A"—Sheet 4 of 10 Sheets

January, 1934

Mississippi Power Company

Inventory of Property to Be Conveyed to the Tennessee Valley Authority

Furniture, Fixtures and Tools Located as Follows:

Iuka	Fulton
Corinth	Tupelo
Booneville	Blue Mountain
Baldwyn	Myrtle
Pontotoc	

[fol. 4297] Exhibit "A"—Sheet 5 of 10 Sheets

January, 1934

Mississippi Power Company

Inventory of Property to Be Conveyed to the Tennessee Valley Authority

City Distribution and Rural Systems Located in the Following Cities, Villages and Communities:

Iuka	Ecran
Burnsville	Verona
Corinth	Shannon
Biggersville—Including	Nettleton
Rural Line from Cor-	Fulton
inth to Biggersville	Golden

DEFENDANTS' EXHIBIT No. 143A

Rienzi
Thrasher
Booneville
Wheeler
Baldwyn
Guntown
Saltillo

Auburn—Rural Extension from Tupelo

Belden
Sherman
Pontotoc

Belmont

Dennis

Tishomingo

Padden

Myrtle

Hickory Flats

Potts Camp

Blue Mountain

Tupelo

Plantersville — Rural Extension from Tupelo

[fol. 4298] Exhibit "A"—Sheet 6 of 10 Sheets

January, 1934

Mississippi Power Company
Inventory of Property to Be Conveyed to the Tennessee
Valley Authority

Non-Operating Property

One lot approximately 32 ft. x 27 ft. formerly used for generating plant—located in Nettleton.

One lot approximately 53 ft. x 80 ft. with brick building approximately 28 ft. x 63 ft. x 12 ft. formerly used as generating plant—located in Baldwyn.

[fol. 4299] Exhibit "A"—Sheet 7 of 10 Sheets

January, 1934

Mississippi Power Company
Inventory of Property to Be Conveyed to the Tennessee
Valley Authority

Rural Distribution Systems

Chesterville Extension from

Country Club " "

Gaulding " "

Godfrey " "

Harden " "

Tupelo.

"

Corinth.

Shannon.

Pontotoc.

DEFENDANTS' EXHIBIT No. 143A

Hill Extension from			Tupelo.
Iuka Road	"	"	Corinth.
Robbins	"	"	Shannon.
Ruff	"	"	Tupelo.
Shirley	"	"	Shannon.
Vaughn	"	"	Shannon.

[fol. 4300] Exhibit "A"—Sheet 8 of 10 Sheets

January, 1934

Mississippi Power Company
Inventory of Property to Be Conveyed to the Tennessee
Valley Authority

Transmission and Distribution Lines

State Line—Iuka—Approximately 5 miles of 44 kv. #1 3 strand copper conductors with telephone line.

Iuka—Corinth—Approximately 23.1 miles of 44 kv. transmission line #2 copper conductors and telephone line.

Burnsville—Booneville—Approximately 19.0 miles of 44 kv. transmission line #2 copper conductors and telephone line.

Iuka—Fulton—Approximately 45.5 miles of 22 kv. transmission line with #4 copper and #1/0 A.C.S.R. conductors.

Tupelo—Okolona—Approximately 19.3 miles of 44 kv. transmission line with 3 #2/0 and #2 aluminum conductors.

Booneville—Tupelo—Approximately 33.5 miles of 13.2 kv. transmission line with 3 #2/0 aluminum conductors.

Tupelo—Pontotoc—Approximately 22.0 miles of 13.2 kv. transmission line with 3 #2 aluminum conductors, including rural services.

Pontotoc—Eceru—Approximately 8.5 miles of 13.2 kv. transmission line with 2 #2 aluminum conductors.

Tupelo—Sherman—Approximately 12.6 miles of 13.2 kv. transmission line with #2 aluminum conductors, including services for 15 customers.

Tupelo—Nettleton—Approximately 15 miles of 13.2 kv. transmission line located partially on 44 kv. line from

DEFENDANTS' EXHIBIT No. 143A

Tupelo to Okolona (previously listed) with #2 aluminum conductors.

Myrtle—Hickory Flats—Approximately 9 miles of 13.2 kv. transmission line with #2 aluminum conductors.

Hickory Flats to Blue Mountain—Approximately 9 miles of 13.2 kv. transmission line with #2 aluminum conductors.

Hickory Flats to Potts Camp—Approximately 6.3 miles of 13.2 kv. transmission line with #2 aluminum conductors.

[fol. 4301]

Exhibit "A"

January 1934

Mississippi Power Company

Inventory of Property to be Conveyed to the Tennessee Valley Authority

Substations

Iuka	44 KV Substation with 3 transformers totaling	1000 KVA capacity
Burnsville	44 " 3 "	150 "
Corinth	44 " 3 "	1200 "
Rienzi	44 " 3 "	150 "
Booneville	44 " 3 "	1000 "
	Includes a 13 KV bank of 3 transformers totaling 450 KVA capacity	
Fulton	22 KV Substation with 3 transformers totaling	225 KVA capacity
Belmont	22 " 3 "	112 "
Dennis	22 " 3 "	75 "
Tishomingo	22 " 3 "	300 "
Tupelo	44 " 6 "	4500 "
Baldwyn	13 " 3 "	750 "
Pontotoc	13 " 3 "	300 "
Myrtle	13 " 3 "	75 "
Blue Mountain	13 " 3 "	112 "

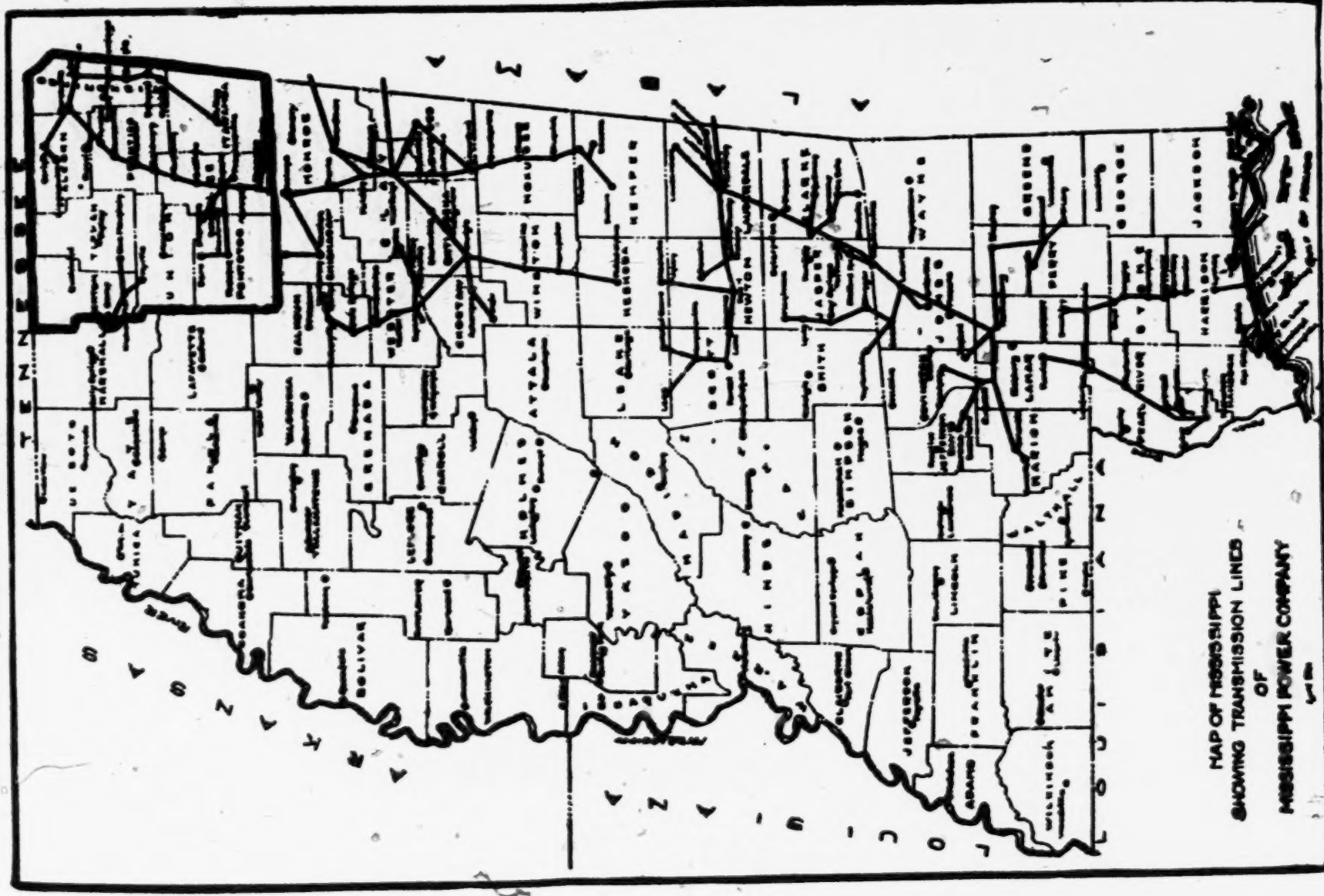
(Here follows 1 photolithograph, side folio 4302)

DEFENDANT'S EXHIBIT NO. 143-A

January 1934

Exhibit "A"

Area in N.E. Mississippi enclosed in red
comprises territory allocated to the
T.V.A by this agreement



DEFENDANTS' EXHIBIT No. 143A

[fol. 4303]

Exhibit "B"

January 1934

Alabama Power Company

Inventory of Property to be Conveyed to the Tennessee Valley Authority

Primary Substations

Primary Substations	Present Replacement Value 12-1-33	Description
Nitrate Plant #2—110/44 KV..	\$113,000	3—4500 KVA 110-44 Transf; 1=20,000 KVA regulator
Wilson Dam.....	\$1,750	Misc. Insulators & Conductors
Decatur.....	\$135,000	3—2,500 KVA 110-44 KV Transf; 2—46 KV breakers
Total.....	\$249,750	

[fol. 4304]

44 Kv. Transmission Lines

44 Kv. Lines	Present Replacement Value 12-1-33	Description
Hobgood to Russellville—Rock- wood.....	\$85,600	Approximately 16.8 Mi. 2/0 Copper Std. and 8.5 Mi. 1/0 ACSR Pole Cap.
Hobgood to Mississippi State Line.....	156,026	Approximately 28.4 Mi. #1 Copper Std. 2 Cross Arm
Hobgood to Courtland to Moul- ton.....	54,400	Approximately 23.3 Mi. #4 Copper Std. 2 Cross Arm
Hobgood to Nitrate Plant #2 and Florence Central Sub- station.....	66,000	Approximately 5.5 Mi. #1 Cop- per Std. and 3 Mi. 203200 on ACSR 4/0 and 2/0 copper
Decatur Central Sub. to L. & N. Shops to Flint.....	32,000	Approximately 5.9 Mi. #4 Cop- per and 1/0 ACSR Misc.
Flint to Hartselle.....	20,000	Approximately 7 Mi. #4 copper.
Decatur Central Sub. to Cedar Lake to Madison.....	86,000	Approximately 17 Mi. #4 and #1 Copper and 1/0 ACSR Misc.
Belle Mina to Athens.....	45,000	Approximately 14.5 Mi. #4 Copper Std. 2 Cross Arm.
Total.....	\$545,026	

If any of these transmission lines conveyed to the Tennessee Valley Authority are located on the same right-of-way on which are located other lines of the Power Company not transferred under this agreement, such right-of-way shall not be conveyed to the Tennessee Valley Authority, but the Authority shall have the right to operate and maintain the line purchased.

If any of the transmission lines conveyed to the Tennessee Valley Authority carry distribution lines on the structures conveyed, the Company shall have the right to operate and maintain these distribution lines.

If any of the transmission lines conveyed to the Tennessee Valley Authority occupy jointly structures with other transmission lines of the Power Company, the structures are not to be conveyed and the operation and maintenance of structures is to be joint.

[fol. 4305] DEFENDANT'S EXHIBIT No. 143A

Exhibit "B"

Sheet 3 of 7 Sheets

January 1934

Alabama Power Company

Inventory of Property to Be Conveyed to the Tennessee Valley Authority

Substations in the following list include property rights, fencing, structures, busses, high and low tension switches, transformers, regulators, street lighting equipment, communication equipment, metering equipment, panels, instruments, relays, metering transformers and miscellaneous equipment that is now connected and essential for operation.

If land is jointly used with facilities not transferred to the Tennessee Valley Authority, the land to be conveyed is only that necessary for the substation.

44 Kv. Substations

44 Kv. Substations	Present Replacement Value 12-1-33	Description
Red Bay (22 k.v.).....	\$10,200	3-75 k.v.a. 1 Unregulated Circuit
Waco Central.....	24,017	3-1000 k.v.a. 1 " "
Alabama-Rockwood Company	14,865	3-333 k.v.a. 2 " "
Leighton Central.....	10,952	3-150 k.v.a. 1 " "
Town Creek Central.....	11,409	3-200 k.v.a. 1 " "
Courtland Central.....	13,709	3-200 k.v.a. 2 " "
Moulton District.....	17,645	4-200 k.v.a. 2 " "
Hobgood Switching Station and Substation.....	31,000	Land is not included
Colrock Central.....	13,709	3-200 k.v.a. 2 Unregulated Circuits
Cherokee Central.....	11,409	3-200 k.v.a. 1 " "
Alabama Rock Asphalt (Margerum).....	11,409	3-200 k.v.a. 1 " "
Mississippi Power Meter. Equipment (Margerum)...	3,500	4-Inst.

[fol. 4306]

Sheet 4 of 7 Sheets

44 kv. Substations	Present Replacement Value 12-1-33	Description
Florence Central.....	\$46,220	3-1000 kva. and 3-500 kva. 11 kv. Sub. 3 Regulated-1 Unregulated Circuits.
East Florence.....	15,900	4-250 kva. 1 Unregulated Circuit 1-Ex. Switch Bay.
Goodyear-Decatur Company...	21,091	3-1500 kva.
Decatur Central.....	35,320	3-1000 kva. 2 Regulated and 2 Unregulated Circuits. Under- ground LV Cables.
L. & N. Shops.....	12,200	3-300 kva. 1 Unregulated Circuit.
Flint Central.....	6,900	3-40 kva. LT Fuses.
Hartselle Central.....	32,236	3-250 kva. 1 Regulated and 1 Unregulated Circuit 2.3 kv. 4-150 kva. 1 Unregulated Circuit, 11 kv.
Belle Mina Central.....	10,952	3-150 kva. 1 Unregulated Cir- cuit.
Athens District.....	31,120	4-1000 kva. 3 Unregulated Circuit.
Total.....	\$385,763	

DEFENDANTS' EXHIBIT No. 143A

[fol. 4307]

January 1934

Exhibit "B"

Sheet 5 of 7 Sheets

Alabama Power Company

Inventory of Property to be
Conveyed to the Tennessee Valley Authority

Rural Distribution Systems in the following list includes poles, cross arms, pins, insulators, guys, ~~transformers~~ transformers, primary and secondary conductors, customers meters and services, customers appliance wiring, property rights and miscellaneous devices now connected and essential to operation, except poles and other facilities not essential for this service which are within urban areas not conveyed.

Rural Distribution Systems

District	Present Replacement 12-1-33	Description
Decatur.....	\$33,004	Flint, Trinity, Moulton Heights, etc.
Hartselle.....	75,231	Hartselle-Falkville Line. Falkville-Eva-Fairview. Hartselle-Decatur Highway. Hartselle-East Pike.
Russellville.....	3,725	Russellville-Hester. Waco-Hovater.
Courtland.....	62,624	Courtland-Moulton-Decatur Highway. Courtland-Wheeler-Hillsboro.
Leighton.....	8,680	Fennel and Alexander Exts.
Cherokee.....	15,403	Barton-Barton-McWilliams.
Sheffield.....	6,521	Florence-Weeden Ext.
Belle Mina.....	23,759	Greenbriar. Decatur Highway. Tennessee Valley Experimental Farm.
Rogersville.....	109,173	Florence-Rogersville. Anderson-Lexington.
Athens.....	143,175	Athens-Tanner. Athens-Ardmore. Athens-Capshaw. Athens-Elkmont.
	<hr/>	
	\$481,295	

[fol. 4308] DEFENDANTS' EXHIBIT No. 148a

January 1984

Exhibit "B"

Sheet 6 of 7 Sheets

Alabama Power Company

This property not to be transferred to Tennessee Valley Authority. It is listed herewith to show the urban distribution which is retained by the Power Company.

Distribution Systems

Urban

(Including Offices and Warehouses Except as Noted)*

District	Present Replacement Value 12-1-33	Description
Decatur*.....	\$350,000	Decatur, Albany, Austinville.
Hartselle.....	81,000	Hartselle, Falkville.
Russellville.....	148,784	
Courtland.....	60,500	Courtland and Town Creek.
Leighton.....	19,500	Leighton.
Cherokee.....	19,500	Cherokee.
Sheffield*.....	760,000	Sheffield, Tuscumbia, Florence, Seven Points and Industrials.
Belle Mina.....	6,100	Belle Mina.
Rogersville.....	0	District.
Athens.....	31,000	District.
Red Bay District.....	40,000	Town and Lines.
Total.....	\$1,516,284	

(Here follows 1 photolithograph, side folio 4309)

DEFENDANT'S EXHIBIT NO. 143-A

Sheet 7 of 7 Sheets

Area in N.W. Alabama enclosed in red
comprises territory allocated to the
T.V.A. by this agreement.

Map of
Electric Distribution Lines
in
ALABAMA
and portion of
FLORIDA

LEGEND

●	Hydro Electric Plant
□	Steam Plant
△	Industrial Generator

06-25-77

4309

[fol. 4310] DEFENDANTS' EXHIBIT No. 143A

January 1934

Exhibit "C"

Sheet 1 of 1 Sheet

Alabama Power Company

Listing of Lands at Joe Wheeler Dam Site to be Conveyed to the

Tennessee Valley Authority

Acreage	Price	Description
Approximately 1,643 acres.....	\$289,505	Lauderdale County—T35— R8W. Certain lands in Sect. 4. Lawrence County—T35—R8W. Certain lands in Sects. 14, 15, 16, 17, 20, 21 and 23. All in State of Alabama com- prising Site # 3 or Joe Wheeler Dam Site on Tennessee River.

[fol. 4311] DEFENDANT'S EXHIBIT No. 143A

Exhibit "D"

Sheet 1 of 7 Sheets

January 1934

The Tennessee Electric Power Company

Inventory of Property to Be Conveyed to the Tennessee Valley Authority

Coal Creek District

Kind of Property	Present Replacement Value 12-1-33	Description
Arlington-Coal Creek Transmission Line, except, however, rights-of-way on which are located other lines of the Power Company not transferred under this agreement, such right-of-way shall not be conveyed to the Tennessee Valley Authority, but the Authority shall have the right to operate and maintain the line purchased.	\$228,803	Approx. 20 miles 66 k.v., 2-0 copper single circuit and about 2.5 miles double circuit all spaced for 120 k.v.
Arlington-Coal Creek Telephone Line.	23,550	29 miles approx. length on highways and private R/W.
Supply Lines 11 k.v.a.....	86,360	Coal Creek-Clinton—about 9.6 mi. Coal Creek-Briceville, " 3 8 " Briceville Lag 1 3 " Clinchmore Lag 6 1 " Coal Creek-Block 10 4 " Black Diamond Lag 2 3 " Sun Coal Co. Lag 1 3 " Red Ash Lag 0 2 " Magnet Mills Extension 0 9 " New Caryville Coal Co. Lag 1 3 "
Coal Creek Primary Substation.	86,200	3000 k.v.a. 66/13.2 k.v. transformers together with regulator, oil circuit breaker switchboard, etc., located on one acre of land. Metal building 22' x 21' on concrete foundation.
Distribution Substitutes 11/2.3 k.v. (for supplying power customers and distribution systems. If land is jointly used with facilities not transferred to the Tennessee Valley Authority, the land and building to be conveyed is only that necessary for the substation.)	40,592	Block Coal & Coke Co. 300 k.v.a. Red Ash Coal Co. 225 " Southern Collieries Co. 300 " Clinton 525 " Magnet Knitting Mills 225 " Briceville 37 1/2 " Sun Coal Co. 600 " Clinch More Coal Co. 450 " Andersonville 250 " Clinch River 2500 "

[fol. 4312] DEFENDANT'S EXHIBIT No. 143A

Exhibit "D"

Sheet 2 of 7 Sheets

January 1934

The Tennessee Electric Power Company

Inventory of Property to Be Conveyed to the Tennessee Valley Authority
Coal Creek District (Continued)

Kind of Property	Present Replacement Value	Description
	12-1-33	
Distribution System in this list includes poles, crossarms, pins, insulators, guys, transformers, primary and secondary conductors, customers meter services, appliance wiring, property rights and miscellaneous devices.	\$102,300	Lines in, to, and through the town of Coal Creek, Clinton, Andersonville, Caryville, Jacksboro and the scattered mining communities.
General Property	4,400	Lot at Coal Creek Clinton Office Furn. & Fixtures Substation Site at Clinton 1 Truck

Total—Coal Creek District \$572,205

[fol. 4313]

Sheet 3 of 7 Sheets

Petros District

Kind of Property	Present Replacement Value	Description
	12-1-33	
Coal Creek-Petros Transmission Line	\$142,117	Approx. 22.5 miles 66 k.v. single circuit 2/0 A.C.S.R.
Coal Creek-Petros Tel. Line....	6,550	About 23 miles on 66 k.v. poles
Supply Line—11 k.v.	68,120	Petros-Windrock about 12.6 miles Petros-Sunbright " 20.6 " Petros-Fork Mtn. " 4.6 " Fork Mtn. Lag " 1.4 "
Petros Substation	45,050	3000 k.v.a. 66/11 k.v. & 750 k.v.a. 11/2.3 k.v. together with switches, panels, etc., located on lot 200' x 300'.
Distribution Substation 11/2.3 k.v. (for supplying power customers and distribution system)	17,436	Windrock Coal Co. 300 k.v.a. Diamond Coal Co. #1 150 " Diamond Coal Co. #2 225 " Fork Mtn. Coal Co. 300 " Coal Field Coal Co. 225 " Oliver Springs 50 " Wartburg 37½ " Lancing 37½ " Sunbright 25 "
Distribution System in this list includes poles, crossarms, pins, insulators, guys, transformers, primary and secondary conductors, customers meter services, appliance wiring, property rights and miscellaneous devices.	31,800	Lines in, to, and through Petros, Oliver Springs, Wartburg, Lancing, Sunbright and the scattered mining communities.
General Property	550	One lot in Oliver Springs One truck

Total—Petros District..... \$311,623

[fol. 4314] DEFENDANTS' EXHIBIT No. 143A

Exhibit "D"

Sheet 4 of 7 Sheets

January 1934

The Tennessee Electric Power Company

Inventory of Property to Be Conveyed to the Tennessee Valley Authority

LaFollette District

Kind of Property	Present Replacement Value 12-1-33	Description
Coal Creek-LaFollette Transmis- sion Line	\$60,113	Approx. 12 miles 66 k.v. single circuit 2/0 A.C.S.R.
LaFollette Substation	36,800	2000 k.v.a. 66/11/2.3 k.v. with switches, panels, etc., located on a lot 112 ft. x 210 ft.
Distribution systems in this list include poles, crossarms, pins, insulators, guys, transformers, primary and secondary conduc- tors, customers meter services, appliance wiring, property rights and miscellaneous devices.	42,000	In and around LaFollette
General Property	9,500	Office building in LaFollette Furniture and Fixtures, Autos.
Total—LaFollette District.		\$148,413

Sheet 5 of 7 Sheets

[fol. 4315]

Westbourne District

Kind of Property	Present Replacement Value 12-1-33	Description
LaFollette-Westbourne Trans- mission Line	\$51,392	Approx. 10 miles 66 k.v. 2/0 ACSR single circuit
Supply Lines—11 k.v.	52,220	Westbourne-Pruden—about 10.3 mi. Westbourne-Cotula— " 2.1 " Westbourne-Morley— " 2.7 "
Westbourne Primary Substa- tion	45,600	4—667 k.v.a. 66/11/2.3 k.v. trans- formers with switches, regulator, panels, structures, etc.
Distribution Substation 11/2.3 k.v.	39,000	Pruden—2000 k.v.a. 33/11/2.3 k.v. Royal Blue Coal Co. 450 k.v.a. Eagan 600 " Clairfield 150 " Morley 300 " Anthras 300 "
Distribution Systems in this list include poles, crossarms, pins, insulators, guys, trans- formers, primary and second- ary conductors, customers meter services, appliance wir- ing, property rights and mis- cellaneous devices.	2,800	Small rural service.
General Property	300	Auto
Total—Westbourne District		\$191,312

[fol. 4316] DEFENDANTS' EXHIBIT No. 143A

Exhibit "D"

Sheet 6 of 7 Sheets

January 1934

The Tennessee Electric Power Company

Inventory of Property to Be Conveyed to the Tennessee Valley Authority

Oneida District

Present
Replacement
Value
12-1-33

Kind of Property

Description

Generating Plants located in leased building and land	\$89,000	2—Unit 700 k.w. steam driven from two boilers 300 B.H.P. in main plant. In the auxiliary plant there is 220 k.w. Gen. capacity and 150 B.H.P.
Supply Lines—11 k.v.	15,150	Oneida-Huntsville about 7.9 miles New River Lag " 2.4 "
Distribution Systems in this list include poles, crossarms, pins, insulators, guys, transformers, primary and secondary conductors, customers meter services, appliance wiring, property rights and miscellaneous devices.	35,300	Oneida, Huntsville, Helenwood distribution.
General Property	2,350	Building and interest in storage lot. Office furniture, fixtures and an auto.
Total—Oneida District	\$141,800	

(Here follows 1 photolithograph, side folio 4317)



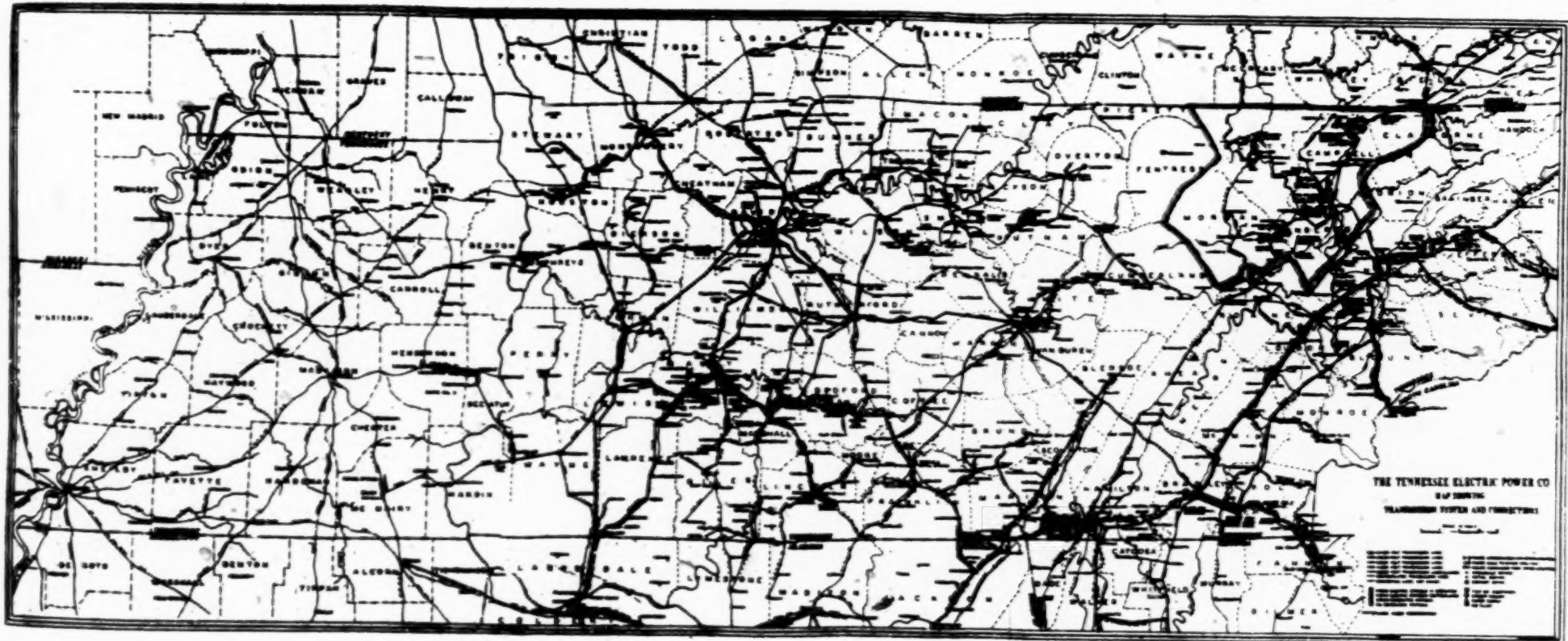
January 1994

Exhibit "g"

Sheet 7 of 7 Sheets

DEFENDANT'S EXHIBIT NO. 143-A

Area in Northern Tennessee enclosed in red comprises territory allocated to the T.V.A. by this agreement.



4317

[fol. 4318] DEFENDANTS' EXHIBIT No. 143 B

Amendatory Contract

This Amendatory Contract, made and entered into this 13th day of February, 1934, between Tennessee Valley Authority, a corporation organized and existing under and by virtue of the Tennessee Valley Authority Act of 1933, hereinafter called Authority, and Commonwealth & Southern Corporation, a corporation organized and existing under the laws of the State of Delaware, hereinafter called Commonwealth Company, Alabama Power Company, a corporation organized and existing under the laws of the State of Alabama, hereinafter called Alabama Company, Tennessee Electric Power Company, a corporation organized and existing under the laws of the State of Maryland, hereinafter called Tennessee Company, Georgia Power Company, a corporation organized and existing under the laws of the State of Georgia, hereinafter called Georgia Company, and Mississippi Power Company, a corporation organized and existing under the laws of the State of Maine, hereinafter called Mississippi Company, the Alabama Company, Tennessee Company, Georgia Company and Mississippi Company to be hereinafter collectively designated as Power Companies,

Witnesseth:

Whereas, the parties hereto, on January 4, 1934, entered into a contract for the purchase and sale of property, the interchange of power, and for other purposes, a copy of said contract being attached hereto and hereby made a part hereof; and

[fol 4319] Whereas, through a misunderstanding on the part of the draftsman of said contract as to the segregation of the consideration stated for the properties in Alabama purchased and sold, Section 2 of said contract fails to carry out the true and correct intent and agreement of the parties at the time of the execution thereof; and

Whereas, none of the parties hereto has acted or changed its position in reliance upon said errors, and all of said parties are now desirous of correcting the said contract so as to make it embody the true intent and agreement which was originally intended to be expressed thereby:

Now, Therefore, in consideration of the covenants herein mutually entered into, the parties hereto covenant and agree as follows:

DEFENDANTS' EXHIBIT No. 143 B

1. Section 2 of said contract of January 4, 1934, is hereby amended to express the true meaning and intent of the parties thereto as follows:

"2. Alabama Company, covenants and agrees to convey to Authority, its nominee or nominees, immediately upon request, and from time to time as requested, any or all of its low tension (44 kv. or lower) transmission lines, substations (including the high tension station at Decatur and the Sheffield steam plant station) and all rural lines and rural distribution systems in the Counties of Lauderdale, Colbert, Lawrence, Limestone, Morgan (excluding the Julaco area) north half of Franklin (including the town of Red Bay), and the territory in the northern part of Cullman served by a certain Lines of Alabama Company ex-[fol. 4320] tending south from Decatur, all in the State of Alabama, said property being more particularly described in Exhibit B, attached hereto and hereby made a part hereof. Alabama Company further agrees promptly upon the execution of this contract to convey to Authority, its nominee or nominees, all of the real property which it owns within and adjacent to the area known as the Joe Wheeler dam site in the Counties of Lawrence and Lauderdale, in the State of Alabama, said property being more particularly described in Exhibit C, attached hereto and hereby made a part hereof. Authority covenants and agrees that when it has taken all of such properties it will pay therefor an aggregate sum of One Million One Hundred Fifty Thousand (\$1,150,000) Dollars. Authority agrees to pay for such properties on the respective dates of delivery thereof as follows:

(1) For the properties shown in Exhibit C, Forty Eight Thousand, Seven Hundred Forty Four (\$48,744) Dollars, which is 16.857015% of the price shown for such properties in said Exhibit:

(2) For each of the properties shown in Exhibit B, 66.267509% of the respective price shown for each of such properties in said Exhibit.

2. Except as herein amended, said contract of January 4, 1934, shall be and remain in full force and effect.

3. This amendatory contract is executed in sextuplicate and shall enure to and be binding upon the successors and assigns of the respective parties hereto.

DEFENDANTS' EXHIBIT No. 143 B

[fol. 4321] In Witness Whereof the parties hereto have caused this instrument to be signed and sealed by their duly authorized officers, and attested under the hand and seal of their respective secretaries.

Commonwealth and Southern Corporation, by Wendell L. Willkie, President.

Attest: E. E. Nelson, Secretary.

Alabama Power Company, by Thos. W. Martin, President.

Attest: Walter M. Hood, Secretary.

Tennessee Electric Power Company, by J. C. Guild, Jr., President.

Attest: B. F. Manning, Secretary.

Mississippi Power Company, by B. E. Eaton, President.

Attest: L. H. Crowell, Secretary.

Georgia Power Company, by P. S. Arkwright.

Attest: W. H. Wright, Secretary.

Tennessee Valley Authority, by Arthur E. Morgan, Chairman.

Attest: C. A. Bock, Secretary.

[fol. 4322] DEFENDANTS' EXHIBIT No. 144

Power Contract Between Tennessee Valley Authority and
Lincoln County Electric Membership Corporation

This Agreement, made and entered into as of the 1st day of December, 1937, but actually executed this 11th day of December, 1937, by and between Tennessee Valley Authority (hereinafter called "Authority"), a corporation created by the Tennessee Valley Authority Act of 1933, its successors and assigns, and Lincoln County Electric Membership Corporation (hereinafter called "Corporation"), a corporation organized, created and existing under and by virtue of the laws of the State of Tennessee.

DEFENDANTS' EXHIBIT No. 144

Witnesseth:

Whereas, Authority, by section 10 of the Tennessee Valley Authority Act of 1933, as amended, is authorized to sell surplus power generated by it and not used in its operations and is directed to give preference to states, counties, municipalities, and cooperative organizations of citizens or farmers, not organized or doing business for profit; and,

Whereas, by section 11 of said act it is provided that the sale of power by Authority shall be primarily for the benefit of the people of the section as a whole and particularly the domestic and rural consumers to whom the power can economically be made available; and

Whereas, Corporation desires to purchase electric power from Authority to be distributed and sold by Corporation to its members, and after investigation by Authority it appears that quantities of power sufficient to meet the requirements of Corporation under the terms of this contract will be available for sale by Authority after all requirements of Authority and of the United States have been fulfilled; and

Whereas, Corporation has been organized under the laws of the State of Tennessee for the purpose of acquiring facilities for the purchase and distribution of electric power to its members at the lowest cost consistent with sound business practice and without profit; and

Whereas, Authority has constructed certain lines for and on behalf of Corporation with the understanding that said lines would be taken over and operated by Corporation as soon as they proved suitable as an operating unit; and

Whereas, said lines were temporarily operated by Authority directly pursuant to agreement labeled "Contract for Collection of Bills and other services," dated October 1, 1935, as extended for a period of one year by supplement dated June 29, 1936, and as further extended by supplement dated June 29, 1937 until January 1, 1938; and

[fol. 4323] Whereas, Corporation has formally signified to Authority its desire to take over and operate said lines and both parties have duly authorized the execution of this agreement,

DEFENDANTS' EXHIBIT No. 144

Now, Therefore, for and in consideration of the premises and of the mutual covenants herein contained (the obligations of Authority being subject to all the provisions of the Tennessee Valley Authority Act of 1933, as amended), the parties hereto mutually covenant and agree as follows:

1. Incorporation of Other Documents.—This contract is executed and shall be construed in connection with a certain "Quitclaim Deed" and "Mortgage" executed between Authority and Corporation on even date herewith, which instruments are attached hereto and hereby made a part hereof.

2. Term of Contract.—This contract shall be effective as of the date of execution hereof and shall continue in effect for twenty (20) years.

3. Power Supply.—Authority will, for the term hereof, supply electricity to Corporation for corporate purposes and for resale. Corporation agrees to purchase from Authority and Authority agrees to supply the entire electricity requirements of Corporation. Should Corporation during the period of this contract desire to increase its purchases in excess of 750 kw., Authority shall deliver such excess upon written demand and after reasonable notice, provided that the requirements of Authority and/or the United States reasonably enable it to do so. Reasonable notice shall be defined as six (6) months after date of demand if the additional requirements are 1500 kw. or less, twelve (12) months after date of demand if the additional requirements are over 3500 kw. but not over 5000 kw., and two (2) years after date of demand if the additional requirements are in excess of 5000 kw. Such electricity shall be delivered in the form of three-phase, alternating current, at approximately 60 cycles per second and approximately 11,950 volts, or at such other voltage as the parties may from time to time agree.

4. Point of Delivery.—The energy to be supplied Corporation hereunder shall be delivered at the metering equipment situated on the low tension side of Authority's substation located on Authority's Athens-Pulaski 44,000 volt transmission line, approximately three (3) miles north of

DEFENDANTS' EXHIBIT No. 144

the Alabama-Tennessee state line on U. S. Highway No. 31, or at such other point as may be mutually agreed upon.

5. Schedule of Rates.—Attached hereto, and hereby made a part hereof, is a "Schedule of Rates and Charges."

(a) Wholesale Rates.—Corporation agrees to pay for the energy supplied by Authority at the rates fixed in Schedule A-1 entitled "Wholesale Power Rate."

(b) Resale Rates.—In order to assure a wide and ample distribution of electricity in the area served by Corporation, Corporation agrees to charge consumers the rates set forth for the several classes thereof in Schedules B-1, B-2, B-3, and B-5 of the said Schedule of Rates and Charges and not to depart therefrom except by agreement of the parties. Additional resale schedules for special classes of consumers or [fol. 4324] special uses of electricity may be added from time to time by agreement of the parties. The term "Contractor" in said schedule shall be construed to mean Corporation. If it should appear that the rates provided for in said resale schedule with the surcharge provided for therein do not produce revenues sufficient to operate and maintain Corporation's electric system on a self-supporting and financially sound basis, then Corporation and Authority shall agree upon, and Corporation shall put into effect, such changes in rates as will provide for the increased revenues necessary to place the system upon such a self-supporting and financially sound basis.

6. Repayment of Indebtedness.—Corporation acknowledges its long term obligation to Authority as of the date of this contract to be One Hundred Eighty-six Thousand, Four Hundred Twenty-nine Dollars and Fifty-seven Cents (\$186,429.57) with interest thereon at the rate of three- and one-half per cent ($3\frac{1}{2}\%$) per annum payable semi-annually. Said amount has been arrived at by deducting from the total cost of the properties conveyed to Corporation by the Quitclaim Deed, executed on even date herewith, being One Hundred Ninety Thousand Five Hundred Twenty-seven Dollars and Forty-two Cents (\$190,527.42), the amount of amortization collections made by Authority for and on account of Corporation, pursuant to the Contract for Collection of Bills and Other Services, hereinabove mentioned,

DEFENDANTS' EXHIBIT No. 144

being Six Thousand Fifteen Dollars and Forty-seven Cents (\$6,015.47), and adding to the result thereof the amount of accounts receivable, being One Thousand Nine Hundred Seventeen Dollars and Sixty-two Cents (\$1,917.62), for electric service to persons during the month of November, 1937, it being hereby agreed that said accounts receivable for said month shall be paid directly to and shall be the property of Corporation. It is hereby expressly recognized and agree that the figures above given are estimates only, subject to final determination, and that the long term obligation of Corporation, as given herein and in the Quitclaim Deed executed in connection herewith, is subject to appropriate adjustment, plus or minus, upon such final determination. Corporation agrees to pay to Authority on account of such long term obligation and any other indebtedness now owing to Authority or hereafter incurred, until such indebtedness shall have been totally repaid,

(a) All amortization charges collected by Corporation as provided in section 7 of this contract:

(b) The total surplus revenues as defined in section 8 of this contract.

All payments due under this agreement shall be made to Authority at its offices at Wilson Dam, Alabama, or at such other place as Authority may from time to time designate. The amount so paid shall be credited to any outstanding accounts of Corporation in Authority's discretion. Failure to make such payments shall constitute a default under the aforesaid Mortgage, and Authority may forthwith at its option declare this contract terminated, and/or exercise all rights and powers granted Authority on the failure of Corporation to perform its obligations and promises to Authority.

[fol. 4325] 7. Amortization Charges.—Corporation agrees to collect the amortization charges provided for in the Schedule of Rates and Charges until all its long term obligations to Authority have been fully discharged. Such charges, when collected, shall be considered trust funds and shall be devoted exclusively to the payment of the obligations of Corporation to Authority.

DEFENDANTS' EXHIBIT No. 144

8. Disposition of Corporation's Revenues.—Corporation, for the purpose of providing reasonable rates for electric service pursuant to this contract and to law, agrees to dispose of its gross revenues (not including amortization charges, which shall be disposed of as hereinbefore provided) in the following manner:

(a) Revenues shall first be used for the payment of all current operating expenses, including salaries, wages, cost of materials, and supplies, power at wholesale and insurance;

(b) From remaining revenues Corporation shall next currently provide for the payment, at maturity, of interest on all bonds or other indebtedness applicable to Corporation's electric system, and for amortization charges on all such bonds or other indebtedness and/or sinking fund payments thereon;

(c) Thereafter revenues shall be used currently to set up reasonable reserves for replacements, new construction, and for contingencies, and to provide a reasonable amount of cash working capital. As further security of Corporation's indebtedness to Authority, Corporation agrees that Authority may in its discretion fix the maximum amounts for the reserves and funds herein authorized to be set up and may direct the investment or disposition of such reserves and funds.

(d) After the payment or setting up of the above amounts, all remaining revenues shall be considered surplus revenues and shall be paid over to Authority in the manner prescribed above until Corporation's indebtedness to Authority on account of property purchased from Authority shall be satisfied.

(e) After the satisfaction of the indebtedness to Authority all the surplus revenues shall serve as a basis for the reduction or elimination of amortization charges or surcharges to consumers, and thereafter for the reduction of rates.

Surplus revenues shall be computed as of June 30 of each year.

9. Terms and Conditions.—Attached hereto, and hereby made a part hereof, is a schedule entitled "Schedule of

DEFENDANTS' EXHIBIT No. 144

Terms and Conditions." The provisions of this schedule may from time to time be changed or supplemented by agreement of Corporation and Authority. It is understood and agreed that the several provisions of said schedule, with such changes as may from time to time be adopted pursuant thereto, as well as the several provisions of this contract and of the Schedule of Rates and Charges, are of the essence of this contract.

10. Rules and Regulations.—Attached hereto, and made a part hereof, is a Schedule of Rules and Regulations. Corporation hereby adopts said schedule as the rules and regulations of Corporation. The provisions of said schedule may [fol. 4326] be amended by Corporation at any time upon ten (10) days' written notice to Authority setting forth the nature of and the reason for the proposed change. No change shall be made in said schedule, however, which is inconsistent with or in violation of any of the provisions of the remaining part of this contract. In said schedule the term "Distributor" shall be construed to mean Corporation.

11. Rendition of Advisory Services by Authority.—Authority agrees upon request to render advisory services to Corporation in problems of personnel and administration and to secure the attendance of its officers at meetings of the Corporation, its Board or Executive Committee, so far as may be practicable and convenient. Corporation agrees to pay the reasonable value of such advisory services as are rendered by Authority at the request of Corporation. Corporation agrees that it will not employ or retain in its employ any person whom Authority reasonably considers unqualified for his position, or whose services Authority reasonably deems to be unnecessary.

12. Use of Corporation's Lines.—Authority shall have the right, to the extent of the transmission capacity of Corporation's lines, to the use of Corporation's poles and wires for transmission purposes; Provided, however, that Authority shall compensate Corporation for such use by such amounts as may be mutually agreed upon, or by an interchange of electricity, compensating Corporation for line losses, or both; Provided, further, that Authority shall indemnify and save Corporation harmless for any loss, dam-

DEFENDANTS' EXHIBIT No. 144

age, and injury, or other casualty to persons or property caused by Authority's use of such transmission facilities.

13. Construction of Additional Facilities.—Authority will construct for Corporation such additional rural transmission and distribution lines in and adjacent to Lincoln County, Tennessee, as Authority and Corporation may from time to time agree upon and designate. Said lines will be constructed by Authority for and on behalf of Corporation as Corporation's agent. Corporation agrees to pay Authority therefor the actual cost to Authority of constructing such lines, including overheads, with interest on unpaid balances at the rate of three and one-half per cent ($3\frac{1}{2}\%$) per annum, payable semi-annually. Such obligations shall be considered as a part of the total long term obligation of Corporation to Authority, and payment shall be secured by the Mortgage executed to Authority on even date herewith.

14. Reports to Authority.—Corporation agrees that not later than the first day of September of each year it will render to Authority a complete report, in such form as Authority may prescribe, of the results of its operations for the preceding year ending June 30, the condition of its property, and such other information as Authority may reasonably request. Corporation agrees promptly to render such additional reports and information to Authority as Authority may from time to time reasonably request.

[fol. 4327] 15. Bonding of Employees.—Corporation agrees to bond in a reasonable amount all employees whose duties require or permit them to handle or dispose of money belonging to Corporation.

16. Discrimination.—Corporation agrees that the surplus power purchased hereunder shall be sold and distributed to the ultimate consumer without discrimination between consumers of the same class, and that no discriminatory rate, rebate, or other special concession will be made or given to any customer.

17. Waiver of Defaults.—Any waiver at any time by either party hereto of its rights with respect to any default of the other party hereto and/or with respect to any other matter arising in connection with this contract shall not be

DEFENDANTS' EXHIBIT No. 144

considered a waiver with respect to any subsequent default or matter.

18. Rescission of Prior Agreements.—The Contract for Collection of Bills and Other Services, dated October 1, 1935, is hereby cancelled, annulled, and rescinded, without prejudice, however, to any rights or obligations of the parties hereto which may have accrued thereunder.

19. Contract Not Transferable: Neither this contract nor any interest therein shall be transferable or assignable by Corporation to any other party without the consent of Authority.

In Witness Whereof, the parties hereto have caused this instrument to be signed and attested in duplicate by their duly authorized officers the day and year first above written.

Tennessee Valley Authority, by (S.) John B. Blandford, Jr., General Manager. (Seal.)

Attest: (S.) Charles E. Hoffman, Assistant Secretary.

Lincoln County Electric Membership Corporation,
(S.) By D. L. Conger, President. (Seal.)

Attest: (S.) R. D. Cowley, Secretary.

The Schedule of Rates and Regulations, Schedule of Terms and Conditions and Schedule of Rules and Regulations attached to and made a part of this contract are substantially the same as said Schedules attached to and made a part of the contract between TVA and the City of Dickson, Tennessee, (Complainants' Exhibit No. 118).

[fol. 4328] DEFENDANTS' EXHIBIT No. 145

Power contract between Tennessee Valley Authority and Arkansas Power & Light Company, Dated June 16, 1937

To avoid repetition this exhibit is not set out herein at length as it appears at page 294 of Defendants' Exhibit No. 154.

DEFENDANTS' EXHIBIT No. 146

Amendatory Agreement Between Tennessee Valley Authority and Aluminum Company of America, Dated July 20, 1937

To avoid repetition this exhibit is not set out herein at length as it appears at page 313 of Defendants' Exhibit No. 154.

[fol.

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DEPENDANTS' EXHIBIT No. 147

Analysis of Power Disposition and Use by TVA

Part I*

Calendar Year 1933

	No. Ultimate Customers 12-31-33	Total of Kilowatt Hours	June	July	August	September	October	November	December
Direct Service:									
Government Res. & Uses:									
Fertilizer Works (Muscle Shoals).....	1	316,241	.....	59,889	64,511	58,664	60,762	72,415	.....
Muscle Shoals Operations (Wilson Village 1-2 & 3)...	**	604,939	.....	75,195	77,168	78,100	82,795	90,337	201,344
Navigation Locks.....	1	62,470	.....	6,600	7,660	5,540	8,700	15,970	18,000
Wholesale Customers:									
Urban:									
Muscle Shoals City, Ala.....	**	20,300	.....	.....	.....	.....	2,500	6,900	10,900
Sub Total.....	..	1,003,950	.....	141,684	149,339	142,304	154,757	185,622	230,244
Sales to C. & S. Companies***.....	..	253,048,375	15,474,135	36,798,330	49,646,650	34,703,710	49,388,521	44,691,158	22,345,871
Grand Total.....	..	254,052,325	15,474,135	36,940,014	49,795,989	34,846,014	49,543,278	44,876,780	22,576,115

* Part II which follows Part I gives a description of the normal source of energy, the method of delivery and the point of delivery for each customer or group of customers.

** Record of ultimate consumers in Muscle Shoals Operations and Muscle Shoals City not available in early period.

*** Alabama Power Company in 1933—Beginning in January 1934 sales were made under contract of January 4 with C. & S. companies including the complainants Alabama Power Company, Tennessee Electric Power Company, and Mississippi Power Company, and the non-complainant Georgia Power Company.

12-22-37

DEFENDANTS' EXHIBIT No. 147

Analysis of Power Disposition and Use by TVA

Sheet 2

Part I

Calendar Year 1934

[fol. 4330]

	No. Ultimate Consumers 12-31-34	Total of Kilowatt Hours	January	February	March	April	May	June	July	August
Direct Service:										
Industrial:										
Robbins Tire & Rubber Co. (Colbert).....	1	26,240								
Temporary Rural:										
Lauderdale Co., Ala.....	160	10,525								
Mississippi Pr. Dist. (Blue Mt. & Myrtle).....	319	134,349						14,126	14,560	19,248
Pontotoc E.P.A., Miss.....	479	278,208						29,776	26,385	41,111
Prentiss Co. E.P.A., Miss.....	739	610,927						62,010	66,778	89,104
Tishomingo Co. E.P.A., Miss.....	516	353,738						32,255	46,756	49,104
Tombigbee E.P.A., Miss.....	1,174	636,776						38,112	48,011	61,111
Government Res. & Uses:										
Fertilizer Works (Muscle Shoals).....	1	6,429,054		18,855	69,554	59,517	67,906	93,660	93,155	90,177
James Bldg., Chattanooga.....	1	46,650								
Muscle Shoals Operations*.....	333	2,556,679	242,000	242,000	242,000	192,711	192,711	192,711	188,597	188,115
Navigation Locks.....	1	175,210	18,740	18,740	18,740	10,730	3,610	4,240	5,740	5,100
Norris Townsite, Tennessee**.....	338	1,669,374						69,400	142,178	157,176
Norris Dam Construction.....	1	9,237,922				194,400	703,687	730,235	848,000	1,212,100
Wheeler Village, Alabama***.....	45	96,951								6,116
Wheeler Dam Construction.....	1	5,803,089	52,600	129,200	235,440	360,000	386,000	407,200	448,800	558,114
Wholesale Customers:										
Urban:										
Amory, Miss.....	759	349,800								
Athens, Alabama.....	856	1,077,200						122,400	142,800	152,100
Muscle Shoals City, Ala.....	79	212,160	14,100	15,100	14,000	10,200	14,100	11,640	17,400	16,100
New Albany, Mississippi.....	728	159,600								
Tupelo, Mississippi.....	1,403	6,003,100		330,100	481,000	490,000	485,000	481,000	000,600	587,100
Cooperative Serving Rural:										
Alcorn Co. E.P.A., Miss.....	1,696	2,134,600						268,400	294,200	318,100
Total.....	9,630	38,002,152	327,440	753,995	1,060,734	1,320,558	1,853,004	2,557,165	2,888,960	3,556,116
Sales to C. & S. Companies.....		151,832,448	18,076,956	54,438,731	4,619,944	24,361,715	40,058,330	7,834,798	1,715,909	1,229,111
Grand Total.....		189,834,600	18,494,396	55,000,726	5,680,678	25,682,273	41,911,344	10,391,963	4,604,869	4,785,227

* Includes employee houses.

** Includes employee houses and neighboring rural resident.

*** Employee houses.

DEFENDANTS' EXHIBIT No. 147

Analysis of Power Disposition and Use by T...

Sheet 2

Part I

Calendar Year 1934

No. Ultimate Consumers 12-1-34	Total of Kilowatt Hours	January	February	March	April	May	June	July	August	September	October	November	December
1	26,240	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	26,240
160	10,525	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
319	134,349	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
479	278,208	.....	.....	.....	.....	.....	14,126	14,560	19,248	18,188	21,038	22,998	24,191
739	610,927	.....	.....	.....	.....	.....	29,776	26,385	41,841	42,992	45,949	47,302	43,963
516	353,738	.....	.....	.....	.....	.....	62,010	66,778	89,104	110,080	99,581	98,673	84,701
1,174	636,776	.....	.....	.....	.....	.....	32,255	46,756	49,954	67,330	69,906	50,462	37,075
		.....	.....	.....	.....	.....	38,112	48,011	61,331	167,193	131,750	107,284	83,695
1	6,429,054	.....	18,855	18,554	59,517	67,906	93,660	93,155	90,377	95,117	261,536	2,255,723	3,323,654
1	46,650	.....	.....	.....	.....	.....	.....	.....	.....	6,750	16,110	20,280	3,510
333	2,556,679	242,000	242,000	242,000	192,711	192,711	192,711	188,597	188,145	191,217	200,602	225,370	258,615
1	175,210	18,740	18,740	18,740	10,730	3,610	4,240	5,740	5,790	8,550	10,860	24,070	45,400
338	1,669,374	.....	.....	.....	.....	.....	69,400	142,178	157,376	161,242	253,403	471,442	414,333
1	9,237,922	.....	.....	.....	194,400	703,687	730,235	848,000	1,212,800	1,280,060	1,440,000	1,683,200	1,145,600
45	96,951	.....	.....	.....	.....	.....	.....	.....	6,636	7,672	9,573	16,771	56,299
1	5,803,089	52,600	129,200	235,440	360,000	386,000	407,200	448,800	558,964	588,728	763,227	898,429	974,501
No. Ultimate Customers Served by Whole- sale Purchasers													
759	349,800	.....	.....	.....	.....	.....	.....	.....	.....	81,000	87,600	87,000	94,200
856	1,077,200	.....	.....	.....	.....	.....	122,400	142,800	152,000	149,600	161,600	163,600	185,200
79	212,160	14,100	15,100	14,000	10,200	14,100	11,640	17,400	16,440	18,120	22,580	25,580	32,900
728	159,600	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	61,200	98,400
1,403	6,003,100	.....	330,100	481,000	490,000	485,000	481,000	000,600	587,400	668,800	700,800	617,600	652,800
1,696	2,134,600	.....	.....	.....	.....	.....	268,400	294,200	318,800	322,200	322,800	294,800	313,400
9,630	38,002,152	327,440	753,995	1,060,734	1,320,558	1,853,004	2,557,165	2,888,960	3,556,206	3,984,779	4,618,915	7,175,433	7,904,953
.....	151,832,448	18,076,956	54,438,731	4,619,944	24,361,715	40,058,330	7,834,798	1,715,909	1,229,451	(-916,204)	(-434,848)	(-132,870)	980,536
.....	189,834,600	18,494,396	55,000,726	5,680,678	25,682,273	41,911,344	10,391,963	4,604,869	4,785,657	3,068,575	4,184,067	7,042,563	8,885,489

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DEFENDANTS' EXHIBIT No. 147

Sheet 3

Analysis of Power Disposition and Use by TVA

Part I

Calendar Year 1935

	No. Ultimate Consumers 12-31-35	Total of Kilowatt Hours	January	February	March	April	May	June	July	August	September	Oct
Direct Service:												
Industrial:												
Robbins Tire & Rubber Co.....	1	804,240	35,360	42,320	45,120	60,000	64,160	72,800	59,040	87,680	111,760	90
Temporary Rural:												
Colbert Co., Ala.....	142	147,514			7,479	6,029	12,126	16,287	18,380	20,209	19,033	14
Lauderdale Co., Ala.....	307	198,731	10,813	9,825	9,513	11,360	13,974	15,383	18,708	23,410	24,261	27
Lincoln Co., Tenn.....	157	5,482										
Mississippi Pr. Dist.....	486	482,487	29,100	26,756	30,970	33,184	50,620	39,121	38,463	37,529	46,837	47
Pontotoc E.P.A., Miss.....	0	87,465	43,066	44,399								
Prentiss Co. E.P.A., Miss.....	0	538,021	92,070	88,402	79,562	87,865	92,866	97,256				
Tishomingo Co. E.P.A., Miss.....	0	383,281	38,909	39,769	36,874	41,027	45,957	57,528	68,221	54,996		
Tombigbee E.P.A., Miss.....	0	1,324,866	82,160	85,258	78,093	91,718	93,958	100,294	123,518	126,864	256,764	23
Government Res. & Uses:												
Fertilizer Works (Muscle Shoals).....	1	54,382,102	4,950,888	6,025,809	4,009,974	6,125,481	7,623,719	7,689,961	8,004,345	4,895,178	3,979,513	37
James Building, Chattanooga.....	1	188,520	15,030	12,120	11,130	17,130	17,610	18,870	19,890	20,070	16,230	16
Muscle Shoals Operations*.....	355	3,233,870	263,646	250,211	246,880	259,360	296,169	264,755	283,179	285,020	258,042	250
Navigation Locks.....	1	348,370	54,360	44,200	31,320	26,730	19,910	15,170	10,150	12,220	15,450	18
Norris Townsite, Tenn.**.....	478	5,329,463	758,863	597,000	456,000	380,770	236,770	263,770	263,770	257,770	251,770	381
Norris Dam Construction.....	1	13,715,200	1,462,400	1,363,200	1,427,200	1,456,000	729,600	1,212,800	1,350,400	1,177,600	908,800	947
Pickwick Village, Tenn.***.....	91	525,129							14,783	18,946	31,665	6
Pickwick Dam Construction.....	1	7,769,741			30,000	168,000	396,000	384,000	447,217	551,054	616,335	1,230
Wheeler Village, Ala.***.....	59	409,315	63,835	53,392	38,651	24,287	15,653	14,070	17,424	16,098	18,071	2
Wheeler Dam Construction.....	1	11,450,285	1,107,765	861,808	988,549	986,993	963,707	988,570	1,098,136	1,106,182	795,609	908
Wholesale Customers:												
Urban:												
Amory, Miss.....	794	1,204,200	88,200	81,600	86,400	85,600	90,400	92,000	109,600	120,800	111,200	111
Athens, Ala.....	994	2,524,000	186,800	170,800	181,600	182,400	195,200	198,400	217,600	220,000	218,400	247
Muscle Shoals City, Ala.....	119	369,000	35,960	31,100	24,350	24,200	20,820	21,550	23,540	25,960	27,600	3
New Albany, Miss.....	799	1,559,000	98,400	94,800	103,200	105,600	117,600	112,800	128,400	141,600	163,200	163
Okolona, Miss.....	464	629,000							56,000	109,600	138,400	120
Pulaski, Tenn.....	810	1,952,000	119,900	121,900	133,600	138,700	155,100	159,500	190,600	205,200	180,000	179
Tupelo, Miss.....	1,711	8,492,000	764,800	611,200	569,600	576,000	604,800	572,800	686,000	815,600	805,200	892
Municipalities Also Serving Rural Customers:												
Dayton, Tenn.....	710	1,229,000		88,800	88,000	96,800	131,200	121,600	141,600	126,400	116,000	111
Cooperatives Serving Rural:												
Alcorn Co. E.P.A., Miss.....	2,165	5,991,000	344,400	290,600	329,800	346,400	369,000	415,700	465,600	490,300	719,920	766
Pontotoc E.P.A., Miss.....	671	800,000			55,200	57,000	63,600	67,800	82,200	79,800	101,400	96
Prentiss Co. E.P.A., Miss.....	801	1,000,000						45,600	144,000	149,400	189,600	167
Tishomingo Co. E.P.A., Miss.....	615	515,000								80,960	122,120	112
Tombigbee E.P.A., Miss.....	1,714	394,000										
Subtotal.....	14,449	127,988,111	10,646,725	11,035,269	9,099,065	11,388,634	12,420,519	13,058,385	14,080,764	11,256,446	10,243,180	7,633
Sales to C. & S. Companies.....		240,614,286	12,463	185,572	310,980	68,327	59,003	(-175,699)	54,481,745	32,897,358	32,057,417	34,626
Grand Total.....		368,602,397	10,659,188	11,220,841	9,410,045	11,456,961	12,479,522	12,882,686	68,562,509	44,153,804	42,300,597	42,260

*Includes employee houses.

**Includes employee houses and neighboring rural residents.

***Employee houses.

	June	July	August	September	October	November	December
Direct							
Industrial:							
Robbins 7,800	59,040	87,680	111,760	90,160	70,800	65,040	
Temporary Re							
Colbert C. 287	18,380	20,209	19,033	14,781	15,318	17,782	
Lauderdale 383	18,708	23,410	24,261	27,209	24,065	10,210	
Lincoln C. 121	38,463	37,529	46,837	47,824	51,782	50,301	
Mississippi 256							
Pontotoc 528	68,221	54,996					
Prentiss 294	123,518	126,864	256,764	235,762	50,477		
Tishomin							
Tombigbee							
Government I							
Fertilizer 1,961	8,004,345	4,895,178	3,979,513	376,776	323,920	376,538	
James Br. 870	19,890	20,070	16,230	16,170	13,290	10,980	
Muscle St. 755	283,179	285,020	258,042	250,010	265,628	310,970	
Navigatio 170	10,150	12,220	15,450	18,790	42,100	57,970	
Norris T. 770	263,770	257,770	251,770	381,000	555,000	927,000	
Norris D. 800	1,350,400	1,177,600	908,800	947,200	915,200	764,800	
Pickwick 1,000	447,217	551,054	616,335	1,230,625	1,820,552	2,125,958	
Pickwick 1,070	17,424	16,098	18,071	22,695	42,684	82,455	
Wheeler 1,570	1,098,136	1,106,182	795,609	908,505	815,316	829,145	
Wheeler 1,570							
Whol							
Urban:							
Amory, N. 1,000	109,600	120,800	111,200	111,200	108,800	118,400	
Athens, N. 400	217,600	220,000	218,400	245,600	240,000	267,200	
Muscle St. 550	23,540	25,960	27,600	33,000	36,600	64,500	
New Alb. 900	128,400	141,600	163,200	163,200	156,000	174,600	
Okolona, 500	56,000	109,600	138,400	120,000	102,400	103,200	
Pulaski, 1,500	190,600	205,200	180,000	179,930	184,000	184,000	
Tupelo, N. 800	680,000	815,600	805,200	892,800	796,800	796,800	
Municipalities							
Dayton, 600	141,600	126,400	116,000	112,800	100,800	105,600	
Cooperatives							
Alcorn C. 700	465,600	490,300	719,920	766,860	714,740	738,300	
Pontotoc 800	82,200	79,800	101,400	99,600	96,600	97,200	
Prentiss 600	144,000	149,400	189,600	167,400	149,400	155,400	
Tishomin		80,960	122,120	112,430	101,730	98,410	
Tombigbee					198,200	196,600	
Subtotal 385	14,080,764	11,256,446	10,243,180	7,633,862	8,131,113	8,994,230	
Sales to C. & 699	54,481,745	32,897,358	32,057,417	34,626,720	33,233,382	52,857,348	
Grand Total 686	68,562,509	44,153,804	42,300,597	42,260,582	41,364,495	61,851,578	

*Includes er

**Includes er

***Employee]

DEPENDANTS' EXHIBIT No. 147

Analysis of Power Disposition and Use by TVA

Part I

Calendar Year 1936

Sheet 4

[Vol. 4332]

	No. Ultimate Customers 12-31-36	Total of Kilowatt Hours	January	February	March	April	May	June	July	August	September
Direct Service:											
Industrial:											
Alabama Asph. Limestone (Colbert).....	1	292,200					45,600	54,000	61,200	39,000	19,200
Goodyear Decatur Mills (Ala. Pr. Dist.).....	1	6,746,700					674,700	774,000	888,000	831,000	876,000
L. & N. R. R. Co. (Ala. Pr. Dist.).....	1	118,300					12,600	12,400	11,600	13,200	13,800
Monsanto Chemical Co.....	1	952,500								8,000	75,600
Robbins Tire & Rubber Co. (Colbert).....	1	1,162,160	37,600	63,840	52,800	83,840	98,800	104,000	92,560	132,000	190,480
Rockwood Ala. Stone Co. (Ala. Pr. Dist.).....	1	161,600					8,000	8,000	9,000	21,600	23,000
Temporary Rural:											
Alabama Power Dist.....	373	734,722					55,172	68,947	71,903	75,574	195,438
Colbert Co., Ala.....	290	316,557	20,182	19,466	14,969	12,600	28,927	33,852	25,361	25,819	43,155
Lauderdale Co., Ala.....	885	763,023	22,113	22,963	19,639	22,288	23,712	61,597	74,581	75,318	140,636
Lincoln Co., Tenn.....	565	267,652	8,184	9,889	11,551	16,606	18,450	22,602	26,644	26,052	28,726
Mississippi Pr. Dist.....		57,510	4,680	7,380	14,935	15,564	14,951				
Duck River E.M.C., Tenn.....		90,438							14,150	20,035	21,662
Pickwick E.M.C., Tenn.....		141,594					19,428	32,910	33,624	55,632	
Government Res. & Uses:											
Chickamauga Dam Construction.....	1	4,394,000				6,000	56,000	92,000	246,000	442,000	652,000
Fertilizer Works (Muscle Shoals).....	1	66,692,000	2,712,743	6,511,990	7,560,798	7,191,607	7,215,382	7,065,755	6,745,635	6,538,020	6,564,350
Guntersville Village, Ala. §§§.....	43	192,900						6,738	10,496	11,546	10,181
Guntersville Dam Construction.....	1	5,055,200				30,000	322,200	299,262	283,504	420,454	541,819
James Bldg., Chattanooga.....	1	134,000	12,450	11,190	14,100	13,800	13,530	14,160	14,970	12,450	10,650
Muscle Shoals Operations§.....	341	3,550,200	329,711	345,588	317,598	280,606	276,028	268,226	279,882	280,872	275,864
Navigation Locks.....	1	304,800	56,410	26,810	55,090	25,050	9,200	10,900	7,090	8,890	10,450
Norris Townsite, Tenn. §§.....	593	6,057,000	960,000	876,000	600,000	477,000	297,000	282,000	276,000	279,000	270,000
Norris Dam Construction.....	1	4,182,400	819,200	732,800	700,800	521,600	342,400	288,000	182,400	73,600	60,800
Pickwick Village, Tenn. §§§.....	119	1,712,000	276,007	277,409	160,978	137,098	59,609	53,010	50,379	48,725	46,236
Pickwick Dam Construction.....	1	17,688,770	2,177,513	1,971,151	1,746,302	997,382	926,791	962,690	1,030,241	901,935	1,230,784
Wheeler Village, Ala. §§§.....	54	474,740	86,891	93,651	46,638	42,846	16,278	14,444	14,672	14,684	14,196
Wheeler Dam Construction.....	1	4,602,200	845,309	832,649	534,362	467,854	268,322	267,756	185,328	172,016	192,504

§ Includes employee houses.

§§ Includes employee houses and neighboring rural residents.

§§§ Employee houses.

Calendar Y.

M...

June	July	August	September	October	November	December
54,000	61,200	39,000	19,200	27,000	28,200	18,000
74,000	888,000	831,000	876,000	933,000	852,000	918,000
12,400	11,600	13,200	13,800	16,900	18,300	19,600
.....	.....	8,000	75,500	168,000	368,500	332,500
34,000	92,560	132,000	190,480	97,600	102,720	105,920
8,000	9,000	21,600	23,000	20,000	16,000	56,000
18,947	71,903	75,574	195,438	189,498	40,135	38,055
13,852	25,361	25,819	43,155	32,755	36,008	23,463
11,597	74,581	75,318	140,636	138,513	91,601	70,062
22,602	26,644	26,052	28,726	34,105	33,469	31,374
.....
.....	14,150	20,035	21,662	20,933	13,658	.....
32,910	33,624	55,632	.....	.....	.....	.....
12,000	246,000	442,000	652,000	873,000	954,000	1,073,000
35,755	6,745,635	6,538,020	6,564,350	1,052,803	283,231	7,249,695
6,738	10,496	11,646	10,181	19,074	62,381	72,514
39,282	283,504	420,454	541,819	838,926	1,173,619	1,145,486
14,160	14,970	12,450	10,650	7,380	4,980	4,440
18,226	279,382	280,872	275,864	283,204	272,058	341,620
10,900	7,090	8,890	10,450	16,000	43,900	35,100
32,000	276,000	279,000	270,000	375,000	630,000	735,000
38,000	182,400	73,600	60,800	124,800	134,400	201,600
13,010	50,379	48,725	46,236	107,450	236,391	258,713
12,690	1,030,241	901,935	1,230,784	1,918,510	1,724,629	2,100,847
14,444	14,672	14,684	14,196	22,914	46,824	60,706
37,756	185,328	172,016	192,504	231,786	321,686	282,718

DEFENDANTS' EXHIBIT No. 147

Analysis of Power Disposition and Use by TVA

Part I

Calendar Year 1936 (Continued)

Sheet 5

(fol. 4333)

Wholesale Customers:		No. Ultimate Customers 12-31-36 Served by Wholesale Purchasers	Total of Kilowatt Hours	January	February	March	April	May	June	July	August	September	
Urban:													
Amory, Miss.	854	1,523,912	112,800	105,080	106,476	107,320	116,236	132,800	146,400	145,600	135,200		
Bolivar, Tenn.	300	265,500							15,600	45,900	46,800		
Dickson, Tenn.	767	1,216,800						76,000	143,200	156,000	162,400	169,600	
Florence, Ala.	2,497	4,870,202							458,400	857,580	828,000		
Holly Springs, Miss.	575	692,400						30,400	80,400	90,400	82,400		
Jackson, Tenn.	1	672,000							46,200	132,000	125,400		
Milan, Tenn.	630	619,200							43,200	107,200	110,400		
Muscle Shoals City, Ala.	114	500,960	80,600	76,200	42,200	37,200	27,000	27,200	27,200	27,200	24,800		
Sheffield, Ala.	1	80,020			5,520	8,300	8,140	7,160	7,420	7,920	7,720		
Somerville, Tenn.	234	220,500							4,500	32,700	34,200		
Tupelo, Miss.	1,837	10,312,600	915,200	723,200	753,600	641,000	675,000	786,000	865,000	856,000	1,018,000		
Municipalities Also Serving Rural Customers:													
Atheas, Ala.	1,436	3,153,500	245,600	229,600	228,000	221,600	225,600	220,000	242,400	251,200	257,600		
Dayton, Tenn.	819	1,576,800	108,800	108,000	118,400	109,600	124,800	144,800	144,800	152,800	151,200		
New Albany, Miss.	1,465	2,819,430	227,400	207,000	206,760	195,180	184,910	219,050	211,200	236,540	306,040		
Okolona, Miss.	664	1,443,100	100,000	94,400	94,400	91,200	96,000	104,300	113,280	130,525	195,295		
Pulaski, Tenn.	954	2,678,400	181,600	168,800	192,000	183,200	211,200	231,200	248,800	260,000	261,600		
Cooperatives Serving Rural:													
Alcorn Co. E.P.A., Miss.	2,264	7,524,340	618,000	483,900	466,700	455,900	487,900	485,500	549,500	580,040	880,000		
Cullman Co. E.M.C., Ala.	730	118,846								695	15,732		
Duck River E.M.C., Tenn.	382	59,450											
Gibson Co. E.M.C., Tenn.	381	226,310								7,670	50,000		
Meigs Co. E.M.C., Tenn.	405	84,640								6,440	12,080		
Middle Tenn. E.M.C.	42	3,000											
Monroe Co. E.P.A., Miss.	329	413,480		1,200	2,840	2,800	14,040	24,800	40,200	49,200	85,600		
North Georgia E.M.C., Ga.	926	192,948							3,000	13,463	22,906		
Pickwick E.M.C., Tenn.	641	308,000									80,900		
Pontotoc E.P.A., Miss.	1,002	1,673,400	93,600	85,800	85,200	79,200	101,850	132,850	135,000	158,750	260,400		
Prentiss Co. E.P.A., Miss.	922	2,244,000	157,200	148,200	147,600	156,600	156,000	175,200	193,200	211,800	241,200		
Tishomingo Co. E.P.A., Miss.	682	1,384,840	101,520	90,710	89,110	89,820	260	97,520	128,120	132,750	172,920		
Tombigbee E.P.A., Miss.	2,118	2,949,300	184,000	174,800	184,400	165,000	184,200	199,000	210,000	263,700	514,600		
Subtotal	27,249	176,674,004	11,495,313	14,499,666	14,573,766	12,885,661	13,610,616	13,996,629	14,704,540	15,447,895	17,598,024	13,	
Sales to C. & S. Companies		556,626,670	3,372,429	663,744	-654,444	207,350	475,223	51,820,211	89,627,600	84,736,309	88,520,774	66,	
Grand Total		733,300,674	14,867,742	15,163,410	13,919,322	13,093,011	14,085,839	65,816,843	104,332,140	100,184,204	106,118,798	80,	

EXHIBIT No. 147

Disposition and Use by TVA

Part I

1937 Through October

Sheet 6

June	July	August	September	October	November	December	March	April
132,800	146,400	145,600	135,200	136,000	132,800	147,200	39,600	42,000
.....	15,600	45,900	46,800	55,500	52,200	49,500	957,000	936,000
143,200	156,000	162,400	169,600	170,400	155,200	184,000	18,000	17,200
.....	458,400	857,580	828,000	906,422	844,800	975,000	78,400	120,960
68,800	80,400	90,400	82,400	94,400	116,800	128,800	45,000	35,000
.....	46,200	132,000	125,400	108,600	115,200	144,600	.....	.....
.....	43,200	107,200	110,400	118,400	113,600	126,400	.....	.....
27,200	27,200	27,200	24,800	30,160	47,000	54,200	.....	.....
7,160	7,420	7,920	7,720	8,120	9,780	9,940	397,500	482,000
.....	4,500	32,700	34,200	51,000	48,900	49,200	.....	.....
786,000	865,000	856,000	1,018,000	1,040,000	979,600	1,060,000	40,591	40,830
.....	.....	.....	.....	.....	.....	.....	25,713	37,467
220,000	242,400	251,200	257,600	268,000	373,400	390,500	58,857	72,495
144,800	144,800	152,800	151,200	140,000	127,200	146,400	30,400	36,111
219,050	211,200	236,540	306,040	289,000	264,200	272,150	.....	.....
104,300	113,280	130,525	195,295	160,650	126,450	136,600	901,000	587,000
231,200	248,800	260,000	261,600	262,400	232,000	245,600	7,782,675	7,952,977
.....	.....	.....	.....	.....	.....	.....	65,740	51,06
485,500	549,500	580,040	880,000	896,600	777,200	843,100	1,032,260	614,93
.....	.....	695	15,732	29,519	36,000	36,900	.....	.....
.....	.....	.....	.....	.....	23,700	35,750	96,400	85,00
.....	.....	7,670	50,000	73,100	47,780	47,760	323,338	286,97
.....	.....	6,440	12,080	19,280	21,480	25,360	32,300	20,38
.....	.....	.....	.....	.....	.....	3,000	66,160	52,67
24,800	40,200	49,200	85,600	64,800	59,000	69,000	741,000	495,00
.....	3,000	13,463	22,906	37,175	50,630	65,774	254,120	122,18
.....	.....	.....	80,900	84,400	87,500	55,200	1,668,678	2,119,87
132,850	135,000	158,750	260,400	222,600	153,450	164,700	59,069	31,41
175,200	193,200	211,800	241,200	231,600	195,600	229,800	279,683	69,61
97,520	128,120	132,750	172,920	154,560	115,580	123,970	.....	.....
199,000	210,000	263,700	514,600	363,800	258,000	247,800	.....	.....
996,629	14,704,540	15,447,895	17,598,024	13,565,637	13,053,740	21,242,517	.....	.....
820,211	89,627,600	84,736,309	88,520,774	66,827,853	98,757,388	72,272,230	.....	.....
816,843	104,332,140	100,184,204	106,118,798	80,393,490	111,811,128	93,514,747	.....	.....

DEFENDANTS' EXHIBIT No. 147

Analysis of Power Disposition and Use by TVA

Part I

Calendar Year 1937 Through October

Sheet 6

(fol. 4334)

	No. Ultimate Consumers 10-31-37	Total Kilowatt Hours for 10 Months	January	February	March	April	May	June	July	August	September
Direct Service:											
Industrial:											
Alabama Asph. Limestone (Colbert).....	1	310.80	1,800	12,600	39,600	42,000	48,000	51,000	52,200	7,800	5,400
Goodyear Decatur Mills (Ala. Pr. Dist.).....	1	8,868.00	894,000	852,000	957,000	936,000	882,000	900,000	873,000	933,000	936,000
L. & N. Railroad (Ala. Pr. Dist.).....	1	138.00	19,300	17,300	18,000	17,200	13,300	9,700	10,600	10,800	11,600
Robbins Tire & Rubber Co. (Colbert).....	1	1,075.20	103,680	72,320	78,400	120,960	133,120	95,360	107,200	115,840	123,520
Rockwood Alabama Stone Co. (Ala. Pr. Dist.).....	1	598.00	20,000	38,000	45,000	35,000	23,000	16,000	35,000	128,000	125,000
Wade and Richey Mining Co. (Ala. Pr. Dist.).....	1	65.80	.....	.....	.....	.....	9,300	12,240	11,640	11,640	11,460
Aluminum Co. of America.....	1	46,051.40	.....	.....	.....	.....	.....	9,629,360	14,880,000	13,632,540	13,632,540
Monsanto Chemical Co.....	1	68,933.50	359,500	371,500	397,500	482,000	435,000	2,550,000	13,145,000	17,360,000	18,720,000
Temporary Rural:											
Alabama Power Dist.....	63	489.95	33,107	34,206	40,591	40,830	47,732	50,592	50,066	59,404	118,135
Colbert Co., Ala.....	534	474.10	30,352	27,738	25,713	37,467	39,197	49,359	60,020	53,184	84,650
Lauderdale Co., Ala.....	1,177	1,063.57	77,932	70,268	58,857	72,493	71,395	89,299	96,293	99,148	232,500
Lincoln Co., Tenn.....	702	430.18	34,169	35,656	30,400	50,111	34,861	41,294	50,711	44,539	55,774
Government Res. & Uses:											
Chickamauga Dam Construction.....	1	9,172.00	1,036,000	1,112,000	901,000	587,000	653,000	652,000	932,000	1,054,000	1,155,000
Fertilizer Works.....	1	67,879.50	7,525,780	7,796,580	7,782,675	7,952,975	8,551,585	7,560,740	8,183,233	208,609	4,627,980
Guntersville Village, Ala.***.....	43	369.45	58,006	73,704	65,740	51,068	23,069	13,487	14,060	14,405	16,819
Guntersville Dam Construction.....	1	6,574.32	565,994	1,042,296	1,032,260	614,932	396,931	298,513	465,940	605,395	709,181
Hiwassee Village, N. C.***.....	45	85.30	.....	.....	.....	.....	.....	2,184	7,440	10,763	20,381
Hiwassee Dam Construction.....	1	1,785.30	6,100	34,200	96,400	85,000	112,000	132,816	155,560	207,237	390,619
Muscle Shoals Operations*.....	357	2,949.32	325,972	300,664	323,338	286,978	289,312	284,280	310,529	292,718	255,286
Navigation Locks.....	1	188.10	37,300	34,600	32,300	20,380	11,520	7,300	6,100	8,300	9,000
Norris Dam Construction.....	1	558.33	243,200	87,058	66,160	52,675	37,600	34,800	2,112	2,000	2,000
Norris Townsite, Tenn.***.....	849	5,230.71	675,000	834,000	741,000	495,000	336,000	300,000	387,200	370,800	466,100
Pickwick Village, Tenn.***.....	116	1,262.75	232,520	249,812	254,120	122,185	72,306	50,744	53,135	46,854	57,224
Pickwick Dam Construction.....	1	16,171.68	1,972,180	2,043,728	1,663,678	2,119,875	1,680,794	1,095,256	1,067,465	1,181,546	1,780,376
Wheeler Village, Ala.***.....	44	344.33	56,323	61,324	59,069	31,452	20,736	15,165	11,745	21,590	22,190
Wheeler Dam Construction.....	1	1,199.13	328,547	362,702	279,683	69,620	84,770	52,099	7,163	3,019	3,600

* Includes employee houses.

** Includes employee houses and neighboring rural residents.

*** Employee houses.

12-22-37

DEFENDANTS' EXHIBIT No. 147

Analysis of Power Disposition and Use by TVA

Part I

Calendar Year 1937 Through October

Sheet 6

	No. Ultimate Consumers 10-31-37	Total Kilowatt Hours 10 Mos	January	February	March	April	May	June	July	August	September	October
t).....	1	3100	1,800	12,600	39,600	42,000	48,000	51,000	52,200	7,800	5,400	49,800
Dist.).....	1	8,983	894,000	852,000	957,000	936,000	882,000	900,000	873,000	933,000	936,000	705,000
.....	1	1880	19,300	17,300	18,000	17,200	13,300	9,700	10,600	10,800	11,600	10,200
.....	1	1,075	103,680	72,320	78,400	120,960	133,120	95,360	107,200	115,840	123,520	124,800
ert).....	1	3880	20,000	38,000	45,000	35,000	23,000	16,000	35,000	128,000	125,000	133,000
la. Pr. Dist.).....	1	860	.....	.....	.....	.....	9,300	12,240	11,640	11,640	11,460	9,600
a. Pr. Dist.).....	1	46,651	.....	.....	.....	.....	.....	.....	9,629,360	14,880,000	13,632,540	7,909,580
.....	1	68,880	359,500	371,500	397,500	482,000	435,000	2,550,000	13,145,000	17,360,000	18,720,000	15,113,000
.....	63	486	33,107	34,206	40,591	40,830	47,732	50,592	50,066	59,404	118,135	15,332
.....	534	474	30,352	27,738	25,713	37,467	39,197	49,359	60,020	53,184	84,650	66,460
.....	1,177	1,067	77,932	70,268	58,857	72,493	71,395	89,299	96,293	99,148	232,500	195,322
.....	702	488	34,169	35,656	30,400	36,111	34,861	41,294	50,711	44,539	55,774	68,683
.....	1	9,170	1,036,000	1,112,000	901,000	587,000	653,000	652,000	932,000	1,054,000	1,155,000	1,090,000
.....	1	67,870	7,525,780	7,796,580	7,782,675	7,952,975	8,551,585	7,560,740	8,183,233	208,600	4,627,980	7,689,201
.....	43	808	58,006	73,704	65,740	51,068	23,069	13,487	14,060	14,405	16,819	39,100
.....	1	6,872	565,994	1,042,296	1,032,260	614,932	396,931	298,513	465,940	605,395	709,181	842,900
.....	45	80	.....	.....	.....	.....	.....	2,184	7,440	10,763	20,381	44,572
.....	1	1,320	6,100	34,200	96,400	85,000	112,000	132,816	155,560	207,237	390,619	565,428
.....	357	2,042	325,972	300,664	323,338	286,978	289,312	284,280	310,529	292,718	255,286	280,225
.....	1	180	37,300	34,600	32,300	20,380	11,520	7,300	6,100	8,300	9,000	21,300
.....	1	341	243,200	87,058	66,160	52,675	37,600	34,800	2,112	2,000	2,000	30,729
.....	849	5,322	675,000	834,000	741,000	495,000	336,000	300,000	387,200	370,800	466,100	645,611
.....	116	1,365	232,520	249,812	254,120	122,185	72,306	50,744	53,135	46,854	57,224	123,835
.....	1	16,128	1,972,180	2,043,728	1,668,678	2,119,875	1,680,794	1,095,256	1,067,465	1,181,546	1,780,376	1,561,765
.....	44	84	56,823	61,324	59,069	31,452	20,736	15,165	11,745	21,590	22,190	44,240
.....	1	1,111	328,547	362,702	279,683	69,620	84,770	52,099	7,163	3,019	3,600	7,928

neighboring rural residents.

DEFENDANTS' EXHIBIT No. 147

Sheet 7

Analysis of Power Disposition and Use by TVA

Part I

Calendar Year 1937 Through October (Continued)

[fol. 4335]

		No. Ultimate Consumers 10-31-37 Served by Wholesale Purchasers	Total Kilowatt Hours for 10 Months	January	February	March	April	May	June	July	August	September
Wholesale Customers:												
Urban:												
Amory, Miss.	913	1,568,800	142,400	126,400	140,000	141,600	153,600	155,200	168,000	183,200	182,400	
Bolivar, Tenn.	337	696,100	49,200	45,600	53,800	62,400	69,700	70,500	75,900	83,600	86,200	
Dickson, Tenn.	832	1,696,800	184,000	162,400	169,600	161,600	159,200	163,200	163,200	182,400	173,600	
Florence, Ala.	2,735	10,108,019	981,600	945,200	1,051,900	979,779	1,041,600	994,340	979,200	1,070,400	1,017,600	
Holly Springs, Miss.	641	1,156,200	120,000	107,200	115,200	104,800	103,200	102,400	108,000	114,400	128,000	
Jackson, Tenn.	1	1,299,000	127,200	96,600	112,200	124,800	145,200	135,000	148,800	97,800	143,400	
Milan, Tenn.	731	1,340,000	127,200	116,000	124,800	118,400	124,000	125,600	143,200	145,600	144,800	
Muscle Shoals City, Ala.	142	373,254	52,200	50,000	48,600	35,900	26,500	29,954	29,000	31,200	30,300	
Sheffield, Ala.	344	1,004,920	10,720	32,200	41,300	39,800	42,500	71,300	120,200	157,000	222,000	
Somerville, Tenn.	275	562,000	48,300	43,800	46,800	50,400	57,000	57,300	61,800	63,900	71,100	
Tupelo, Miss.	1,918	8,149,800	1,063,000	923,000	921,000	671,000	644,700	667,000	739,000	752,800	858,000	
Tuscumbia, Ala.	1,002	1,601,000				171,000	199,000	216,000	228,000	244,000	290,000	
Municipalities Also Serving Rural Customers:												
Athens, Ala.	1,658	3,970,260	357,300	311,360	341,000	332,500	352,100	355,900	372,400	390,800	577,300	
Dayton, Tenn.	854	1,509,600	152,000	131,200	138,400	136,000	144,000	160,800	169,600	170,400	157,600	
New Albany, Miss.	1,597	2,912,520	265,500	236,270	251,070	240,380	253,920	265,190	284,400	303,890	412,100	
Okolona, Miss.	756	1,680,850	130,650	109,300	115,950	120,350	158,250	175,400	195,450	209,100	245,600	
Pulaski, Tenn.	1,046	2,695,200	240,000	215,200	243,200	244,800	276,000	282,400	296,800	304,000	285,600	
Cooperatives Serving Rural:												
Alcorn Co. E.P.A., Miss.	2,465	7,130,500	841,800	686,000	571,400	560,700	600,400	602,100	642,100	659,800	949,900	
Cullman Co. E.M.C., Ala.	1,019	490,200	39,000	33,300	40,500	41,400	46,500	49,200	54,500	56,100	62,700	
Duck River E.M.C., Tenn.	776	493,285	39,560	34,535	34,910	37,895	41,590	46,940	50,435	59,195	64,800	
Gibson Co. E.M.C., Tenn.	1,059	1,027,900	46,620	46,800	54,280	61,040	82,800	103,460	123,220	134,360	171,800	
Meigs Co. E.M.C., Tenn.	689	407,285	29,520	26,750	28,365	29,150	34,250	43,950	50,900	54,650	53,900	
Middle Tennessee E.M.C., Tenn.	712	504,600	15,600	23,100	30,600	38,700	52,800	62,400	70,800	74,700	68,700	
Monroe Co. E.P.A., Miss.	395	907,200	63,400	73,000	61,000	72,600	102,600	114,200	86,200	80,800	163,000	
North Georgia E.M.C., Ga.	1,632	994,030	70,930	70,400	81,400	88,400	101,400	104,900	114,700	122,400	115,700	
Pickwick E.M.C., Tenn.	763	729,700	60,300	52,700	64,400	58,400	65,200	67,500	72,800	76,600	107,300	
Pontotoc E.P.A., Miss.	1,085	2,069,200	154,900	132,700	147,100	147,800	157,150	173,200	189,350	204,950	400,900	
Prentiss Co. E.P.A., Miss.	980	2,289,000	201,000	189,600	210,000	208,800	211,800	213,600	237,000	246,000	294,600	
Southwest Tennessee E.M.C., Tenn.	722	380,545							11,890	59,400	139,100	
Tishomingo Co. E.P.A., Miss.	767	1,323,860	121,850	109,950	112,680	106,800	107,640	119,600	141,940	149,160	185,500	
Tombigbee E.P.A., Miss.	2,469	3,025,600	246,200	216,800	229,800	223,800	242,200	245,800	123,400	306,000	588,400	
Joe Wheeler E.M.C., Ala.	575	127,890										
Subtotal	35,836	306,513,977	20,619,212	20,911,621	20,574,739	19,720,795	19,803,128	20,338,562	42,096,757	44,519,187	51,964,500	
Sales to C. & S. Companies		13,325,083	11,750,439	1,574,644								
Grand Total		319,839,060	32,369,651	22,486,265	20,574,739	19,720,795	19,803,128	20,338,562	42,096,757	44,519,187	51,964,500	

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DEFENDANTS' EXHIBIT No. 147

Sheet 7

of Power Disposition and Use by TVA

Part I

Year 1937 Through October (Continued)

February	March	April	May	June	July	August	September	October
126,400	140,000	141,600	153,600	155,200	168,000	183,200	182,400	176,000
45,600	53,800	62,400	69,700	70,500	75,900	83,600	86,200	99,200
162,400	169,600	161,600	159,200	163,200	163,200	182,400	173,600	177,600
945,200	1,051,900	979,779	1,041,600	994,340	979,200	1,070,400	1,017,600	1,046,400
107,200	115,200	104,800	103,200	102,400	108,000	114,400	128,000	153,000
96,600	112,200	124,800	145,200	135,000	148,800	97,800	143,400	168,000
116,000	124,800	118,400	124,000	125,600	143,200	145,600	144,800	170,400
50,000	48,600	35,900	26,500	29,954	29,000	31,200	30,300	39,600
32,200	41,300	39,800	42,500	71,300	120,200	157,000	222,000	267,900
43,800	46,800	50,400	57,000	57,300	61,800	63,900	71,100	81,600
923,000	921,000	671,000	644,700	667,000	739,000	752,800	858,000	910,300
.....	.....	171,000	199,000	216,000	228,000	244,000	290,000	253,000
311,360	341,000	332,500	352,100	355,900	372,400	390,800	577,300	579,600
131,200	138,400	136,000	144,000	160,800	169,600	170,400	157,600	149,600
236,270	251,070	240,380	253,920	265,190	284,400	303,890	412,150	399,750
109,300	115,950	120,350	158,250	175,400	195,450	209,100	245,650	220,750
215,200	243,200	244,800	276,000	282,400	296,800	304,000	285,600	307,200
686,000	571,400	560,700	600,400	602,100	642,100	659,800	949,900	1,016,300
33,390	40,500	41,400	46,500	49,200	54,300	56,100	62,700	67,200
34,535	34,910	37,895	41,590	46,940	50,435	59,195	64,805	83,420
46,800	54,280	61,040	82,800	103,460	123,220	134,360	171,880	203,640
26,750	28,365	29,150	34,250	43,950	50,900	54,650	53,950	55,800
23,100	30,600	38,700	52,800	62,400	70,800	74,700	68,700	67,200
73,000	61,000	72,600	102,600	114,200	86,200	80,800	163,000	90,400
70,400	81,400	88,400	101,400	104,900	114,700	122,400	115,700	123,800
52,700	64,400	58,400	65,200	67,500	72,800	76,600	107,300	104,500
132,700	147,100	147,800	157,150	173,200	189,350	204,950	400,950	361,100
189,600	210,000	208,800	211,800	213,600	237,000	246,000	294,600	276,600
.....	.....	.....	.....	.....	11,890	59,400	139,100	170,155
109,950	112,680	106,800	107,640	119,600	141,940	149,160	185,540	168,700
216,800	229,800	223,800	242,200	245,800	123,400	306,000	588,400	462,200
.....	.....	.....	.....	.....	.....	.....	.....	127,890
0,911,621	20,574,739	19,720,795	19,803,128	20,338,562	42,096,757	44,519,187	51,964,560	45,965,416
1,574,644	.....	.....	.....	.....	.....	.....	.....	.....
2,486,265	20,574,739	19,720,795	19,803,128	20,338,562	42,096,757	44,519,187	51,964,560	45,965,416

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DEFENDANTS' EXHIBIT No. 147

[fol. 4336]

Analysis of Power Disposition and Use by TVA

Part II

Calendar Year 1933

Sheet 8

Direct Service:	Source of Energy	Method of Delivery	Point of Delivery
Government Res. & Uses:			
Fertilizer Works (Muscle Shoals).....	Wilson Dam.....	2.3 KV via U.S.N.P. #2 Substation.....	Fertilizer Works Substation
Muscle Shoals Operations		(2.3 KV via U.S.N.P. #2 Substation.....)	(Fertilizer Works Substation
(Wilson Villages 1, 2, & 3.....)	Wilson Dam.....	(2.3 & 46 KV Buses at U.S.N.P. #2 Substation.....)	(U.S.N.P. #2 Substation
		(2.3 KV Feeder from Wilson Dam.....)	(Wilson Dam
Navigation Locks.....	Wilson Dam.....	2.3 KV Feeder from Wilson Dam.....	Wilson Dam Lock #2
Wholesale Customers:			
Urban:			
Muscle Shoals City, Alabama.....	Wilson Dam.....	2.3 KV via U.S.N.P. #2 Substation.....	Reservation Boundary Line

12-30-37

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DEFENDANTS' EXHIBIT No. 147

Analysis of Power Disposition and Use by TVA

Part II

Calendar Year 1934

Sheet 9

Direct Service:	Normal Source of Energy	Method of Delivery	Point of Delivery
Industrial:			
Robbins Tire & Rubber Co. (Colbert)	Wilson Dam	2.3 KV Feeder from Fertilizer Works Substation	Substation on Customer's Property
Temporary Rural:			
Lauderdale County, Alabama	C. & S. Interchange	A. P. Co. 11 KV Feeder from East Florence Substation	Ultimate Consumer Meters
Mississippi Power District (Blue Mountain & Myrtle)	Blue Mountain & Myrtle Oil Engines*	2.3 & 13.2 KV from Oil Engine Plants**	Ultimate Consumer Meters
Pontotoc E.P.A., Mississippi	C & S Interchange	2.3 & 13.2 KV via TVA 44 KV Line from Okolona, Miss.**	Ultimate Consumer Meters
Prentiss County E.P.A., Miss.	C & S Interchange	2.3 & 13.2 KV via TVA 44 KV Line from Okolona, Miss.**	Ultimate Consumer Meters
Prentiss County E.P.A., Miss.	C & S Interchange	2.3 & 11 KV via TVA 44 KV Line from Margerum, Ala.**	Ultimate Consumer Meters
Tishomingo County E.P.A., Miss.	C & S Interchange	2.3 & 22 KV via TVA 44 KV Line from Margerum, Ala.**	Ultimate Consumer Meters
Tombigbee E.P.A., Miss.	C & S Interchange	2.3 & 13.2 KV via TVA 44 KV Line from Okolona, Miss.**	Ultimate Consumer Meters
Government Res. & Uses:			
Fertilizer Works (Muscle Shoals)	Wilson Dam	2.3 & 12 KV via U.S.N.P. #2 Substation	Fertilizer Works Substation
James Building, Chattanooga	C & S Interchange	T. E.P. Co., Chattanooga System	James Building, Chattanooga
Muscle Shoals Operations	Wilson Dam	2.3 KV via U.S.N.P. #2 Substation	Fertilizer Works Substation
Muscle Shoals Operations	Wilson Dam	12, 2.3 & 0.46 KV Buses at U.S.N.P. #2 Substation	U.S.N.P. #2 Substation
Muscle Shoals Operations	Wilson Dam	2.3 KV Feeder from Wilson Dam	Wilson Dam
Navigation Locks	Wilson Dam	2.3 KV Feeder from Wilson Dam	Wilson Dam Lock #2
Navigation Locks	C & S Interchange	A. P. Co. 11 KV Feeder from East Florence Substation	Wheeler Dam Lock #3
Norris Townsite, Tennessee	C & S Interchange	T.E.P. Co. 66 KV System	Clinch River Substation
Norris Dam Construction	C & S Interchange	T.E.P. Co. 66 KV System	Clinch River Substation
Wheeler Village, Alabama	Wilson Dam	2.3 KV Feeder from Wheeler Dam Substation	Ultimate Consumer Meters
Wheeler Dam Construction	Wilson Dam	12 KV Feeder from U.S.N.P. #2 Substation	Wheeler Dam Substation
Wholesale Customers:			
Urban:			
Amory, Mississippi	C & S Interchange	TVA 44 KV Line from Okolona, Mississippi	Amory Substation
Athens, Alabama	C & S Interchange	A. P. Co. 11 KV System	Athens Central Substation
Muscle Shoals City, Alabama	Wilson Dam	2.3 KV via U.S.N.P. #2 Substation	Reservation Boundary Line
New Albany, Mississippi	C & S Interchange	TVA 44 KV Line from Okolona, Mississippi**	New Albany City Substation
Tupelo, Mississippi	C & S Interchange	TVA 44 KV Line from Okolona, Mississippi**	Tupelo Substation
Cooperative Serving Rural:			
Alcorn County E.P.A., Miss.	C & S Interchange	TVA 44 KV Line from Margerum, Ala.**	Corinth Substation

* Operation of oil engines until power from the hydro system was made available by means of transmission facilities.

** Property acquired from Mississippi Power Company under contract of January 4, 1934.

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DEFENDANT'S EXHIBIT No. 147

Analysis of Power Disposition and Use by TVA

Part II

Calendar Year 1935

Sheet 10

[fol. 4338]

Direct Service:	Normal Source of Energy	Method of Delivery	Point of Delivery
Industrial:			
Robbins Tire & Rubber Co. (Colbert)	Wilson Dam	2.3 KV Feeder then 11 KV Feeder from Fertilizer Works Sub.	Substation on Customer's Property
Temporary Rural:			
Colbert County, Alabama	Wilson Dam	11 KV Feeder from Fertilizer Works Substation	Ultimate Consumer Meters
Lauderdale County, Alabama	C & S Interchange	A. P. Co. 11 KV Feeder from East Florence Substation	Ultimate Consumer Meters
Lincoln County, Tennessee	C & S Interchange	11 KV via TVA 44 KV Line from near Athens, Alabama	Ultimate Consumer Meters
Mississippi Power District	Blue Mountain & Myrtle Oil Engines*	2.3 & 13.2 KV from Oil Engine Plants**	Ultimate Consumer Meters
Mississippi Power District	C & S Interchange	11 KV via TVA 44 KV Line from Okolona, Mississippi**	Ultimate Consumer Meters
Mississippi Power District	Wilson Dam	11 KV via TVA 44 KV Line from Pickwick Dam Substation	Ultimate Consumer Meters
Pontotoc E.P.A., Mississippi	C & S Interchange	2.3 & 11 KV via TVA 44 KV Line from Okolona, Mississippi**	Ultimate Consumer Meters
Prentiss County E.P.A., Mississippi	C & S Interchange	2.3 & 11 KV via TVA 44 KV Line from Okolona, Mississippi**	Ultimate Consumer Meters
Prentiss County E.P.A., Mississippi	C & S Interchange	2.3 & 11 KV via TVA 44 KV Line from Margerum, Alabama**	Ultimate Consumer Meters
Tishomingo County E.P.A., Miss.	C & S Interchange	2.3 & 22 KV via TVA 44 KV Line from Margerum, Alabama**	Ultimate Consumer Meters
Tombigbee E.P.A., Mississippi	C & S Interchange	2.3 & 11 KV via TVA 44 KV Line from Okolona, Mississippi**	Ultimate Consumer Meters
Tombigbee E.P.A., Mississippi	Wilson Dam	2.3 & 11 KV via TVA 44 KV Line from Pickwick Dam Substation	Ultimate Consumer Meters
Government Res. & Uses:			
Fertilizer Works (Muscle Shoals)	Wilson Dam	2.3 & 12 KV via U.S.N.P. #2 Substation	Fertilizer Works Substation
James Building, Chattanooga	C & S Interchange	T.E.P. Co. Chattanooga System	James Building, Chattanooga
Muscle Shoals Operations	Wilson Dam	2.3 KV via U.S.N.P. #2 Substation	Fertilizer Works Substation
Muscle Shoals Operations	Wilson Dam	12, 2.3 & 0.46 KV Buses at U.S.N.P. #2 Substation	U.S.N.P. #2 Substation
Muscle Shoals Operations	Wilson Dam	2.3 KV Feeder from Wilson Dam	Wilson Dam
Navigation Locks	Wilson Dam	2.3 KV Feeder from Wilson Dam	Wilson Dam Lock #2
Navigation Locks	C & S Interchange	A. P. Co. 11 KV Feeder from East Florence Substation	Wheeler Dam Lock #3
Norris Townsite, Tennessee	C & S Interchange	T.E.P. Co. 66 KV System	Clinch River Substation
Norris Dam Construction	C & S Interchange	T.E.P. Co. 66 KV System	Clinch River Substation
Pickwick Village, Tennessee	Wilson Dam	2.3 KV Feeder from Pickwick Dam Substation	Ultimate Consumer Meters
Pickwick Dam Construction	Wilson Dam	110 KV Line from Wilson Dam	Pickwick Dam Substation
Wheeler Village, Alabama	Wilson Dam	2.3 KV Feeder from Wheeler Dam Substation	Ultimate Consumer Meters
Wheeler Dam Construction	Wilson Dam	12 KV Feeder then 44 KV Feeder from U.S.N.P. #2 Substation	Wheeler Dam Substation

* Operation of oil engines until power from the hydro system was made available by means of transmission facilities.

** Property acquired from Mississippi Power Company under contract of January 4, 1934.

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DEFENDANTS' EXHIBIT No. 147

[fol. 4339]

Analysis of Power Disposition and Use by TVA

Part II

Calendar Year 1935 (Continued)

Sheet 11

Wholesale Customers:	Normal Source of Energy	Method of Delivery	Point of Delivery
Urban:			
Amory, Mississippi	C & S Interchange	TVA 44 KV Line from Okolona, Mississippi	Amory Substation
Athens, Alabama	C & S Interchange	A. P. Co. 11 KV System	Athens Central Substation
Muscle Shoals City, Alabama	Wilson Dam	23 KV via U.S.N.P. #2 Substation	Reservation Boundary Line
New Albany, Mississippi	C & S Interchange	11 KV via TVA 44 KV Line from Okolona, Mississippi**	New Albany City Substation
New Albany, Mississippi	Wilson Dam	11 KV via 44 KV Line from Pickwick Dam Substation	New Albany City Substation
Okolona, Mississippi	C & S Interchange	TVA 44 KV Line from Okolona, Mississippi	Okolona Substation
Pulaski, Tennessee	C & S Interchange	TVA 44 KV Line from near Athens, Alabama	Pulaski Substation
Tupelo, Mississippi	C & S Interchange	TVA 44 KV Line from Okolona, Mississippi**	Tupelo Substation
Municipalities Serving Rural:			
Dayton, Tennessee	C & S Interchange	T.E.P. Co. 22 KV Bus at Athens, Tenn. Substation	Dayton Substation
Cooperatives Serving Rural:			
Alcorn County E.P.A., Mississippi	C & S Interchange	TVA 44 KV Line from Margerum, Alabama**	Corinth Substation
Alcorn County E.P.A., Mississippi	Wilson Dam	44 KV Line from Pickwick Dam Substation	Corinth Substation
Pontotoc E.P.A., Mississippi	C & S Interchange	TVA 44 KV Line from Okolona, Mississippi**	Pontotoc County Lines
Pontotoc E.P.A., Mississippi	Wilson Dam	44 KV Line from Pickwick Dam Substation	Pontotoc County Lines
Prentiss County E.P.A., Mississippi	C & S Interchange	TVA 44 KV Line from Margerum, Alabama**	Booneville Substation
Prentiss County E.P.A., Mississippi	Wilson Dam	44 KV Line from Pickwick Dam Substation	Booneville Substation
Tishomingo County E.P.A., Miss	C & S Interchange	TVA 44 KV Line from Margerum, Alabama**	Iuka Substation
Tishomingo County E.P.A., Miss	Wilson Dam	44 KV Line from Pickwick Dam Substation	Iuka Substation
Tombigbee E.P.A., Mississippi	C & S Interchange	TVA 44 KV Line from Okolona, Mississippi**	Tupelo Substation
Tombigbee E.P.A., Mississippi	Wilson Dam	44 KV Line from Pickwick Dam Substation	Tupelo Substation

** Property acquired from Mississippi Power Company under contract of January 4, 1934.

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DEFENDANTS' EXHIBIT No. 147

[fol. 4340]

Analysis of Power Disposition and Use by TVA

Part II

Calendar Year 1936

Sheet 12

	Normal Source of Energy	Method of Delivery	Point of Delivery
Direct Service:			
Industrial:			
Alabama Asph. Limestone (Colbert).....	Wilson Dam*	44 KV Line from Wilson Dam#	Margerum Substation
Goodyear Decatur Mills, Ala.....	C & S Interchange	TVA 44 KV Line from Decatur Primary Substation#	Goodyear Mills Substation
L. & N. R. R. Co., Ala.....	C & S Interchange	TVA 44 KV Line from Decatur Primary Substation#	L & N Shops Substation
Monsanto Chemical Co.....	C & S Interchange	TVA 44 KV Line from Athens, Alabama	Monsanto Substation
Monsanto Chemical Co.....	Wilson Dam*	154 KV Line from Wheeler Dam***	Monsanto Substation
Robbins Tire & Rubber Co. (Colbert).....	Wilson Dam*	11 KV Feeder from Fertilizer Works Substation	Substation on Customer's Property
Rockwood Ala. Stone Co., Ala.....	Wilson Dam*	44 KV Line from Wilson Dam#	Rockwood Substation
Temporary Rural:			
Alabama Power District.....	C & S Interchange	2.3 & 1 KV via TVA 44 KV Line from Decatur Primary Sub.#	Ultimate Consumer Meters
Alabama Power District.....	Wilson Dam*	2.3 & 1 KV via 44 KV Line from Wilson Dam#	Ultimate Consumer Meters
Colbert County, Ala.....	Wilson Dam*	11 KV Feeder from Fertilizer Works Substation	Ultimate Consumer Meters
Lauderdale County, Ala.....	C & S Interchange	A. P. Co. 11 KV Feeder from E. Florence Substation	Ultimate Consumer Meters
Lauderdale County, Ala.....	Wilson Dam*	11 KV via 44 KV Line from Wilson Dam##	Ultimate Consumer Meters
Lincoln County, Tenn.....	C & S Interchange	11 KV via TVA 44 KV Line from near Athens, Ala.	Ultimate Consumer Meters
Lincoln County, Tenn.....	Wilson Dam*	11 KV via 154 KV Line from Wheeler Dam***	Ultimate Consumer Meters
Mississippi Power District.....	C & S Interchange	11 KV via TVA 44 KV Line from Okolona, Miss.***	Ultimate Consumer Meters
Mississippi Power District.....	Wilson Dam*	11 KV via 44 KV Line from Pickwick Dam Substation	Ultimate Consumer Meters
Duck River E.M.C. Tenn.....	Wilson Dam*	11 KV from Lincoln County	Ultimate Consumer Meters
Pickwick E.M.C. Tenn.....	Wilson Dam*	6.9 KV from Pickwick Dam Substation	Ultimate Consumer Meters
Pickwick E.M.C. Tenn.....	Wilson Dam*	Alcorn 11 KV System	Ultimate Consumer Meters
Government Res. & Uses:			
Chickamauga Dam Construction.....	C & S Interchange	T.E.P. Co. 44 KV System	Chickamauga Dam Substation
Fertilizer Works (Muscle Shoals).....	Wilson Dam*	2.3 & 12 KV via U.S.N.P. #2 Substation	Fertilizer Works Substation
Guntersville Village, Ala.....	C & S Interchange	11 KV from Guntersville Dam Substation	Ultimate Consumer Meters
Guntersville Village, Ala.....	Wilson Dam*	11 KV from Guntersville Dam Substation	Ultimate Consumer Meters
Guntersville Dam Construction.....	C & S Interchange	11 KV via A. P. Co. 110 KV System	Guntersville Dam Substation
Guntersville Dam Construction.....	Wilson Dam*	11 KV via TVA 154 KV System	Guntersville Dam Substation
James Building, Chattanooga.....	C & S Interchange	T.E.P. Co. Chattanooga System	James Building, Chattanooga
Navigation Locks.....	Wilson Dam	2.3 KV T.E.P. Co. Feeder from Wilson Dam	Wilson Dam Lock #2
Navigation Locks.....	Wilson Dam*	TVA 11 KV System in Lauderdale County	Wheeler Dam Lock #3
Navigation Locks.....	C & S Interchange	A. P. Co. 11 KV Feeder from E. Florence Substation	Wheeler Dam Lock #3
Navigation Locks.....	Wheeler Dam	2.3 KV Feeder from Wheeler Dam	Wheeler Dam Lock #3
Norris Townsite, Tenn.....	C & S Interchange	T.E.P. Co. 66 KV System	Clinch River Substation
Norris Dam Construction.....	C & S Interchange	T.E.P. Co. 66 KV System	Clinch River Substation
Pickwick Village, Tenn.....	Wilson Dam*	2.3 KV Feeder from Pickwick Dam Substation	Ultimate Consumer Meters
Pickwick Dam Construction.....	Wilson Dam*	110 KV Line from Wilson Dam	Pickwick Dam Substation
Wheeler Village, Ala.....	Wilson & Wheeler Dams	2.3 KV Feeder from Wheeler Dam Substation	Ultimate Consumer Meters

* Wilson-Norris Hydro System from July 28 through November 8, 1936. Wilson-Norris-Wheeler Hydro System after November 8, 1936.

** Property acquired from Mississippi Power Company under Contract of January 4, 1934.

*** Property acquired from Mississippi Power Company under Contract of January 4, 1934, plus TVA extensions.

Property acquired from Alabama Power Company under Contract of January 4, 1934.

Property acquired from Alabama Power Company under Contract of January 4, 1934, plus TVA extensions.

*** Operated part of year at 44 KV.

4249

DEFENDANTS' EXHIBIT No. 147

Analysis of Power Disposition and Use by TVA

Part II

Calendar Year 1936 (Continued)

Sheet 13

	Normal Source of Energy	Method of Delivery	Point of Delivery
Direct Service (Continued):			
Government Res. & Uses (Continued):			
Wheeler Dam Construction	Wilson Dam*	44 KV Feeder from Wilson Dam	Wheeler Dam
Wheeler Dam Construction	Wheeler Dam	2.3 KV Feeder from Wheeler Dam	Wheeler Dam
Muscle Shoals Operation	Wilson Dam*	2.3 KV via U.S.N.P. #2 Substation	Fertilizer Works Substation
Muscle Shoals Operation	Wilson Dam*	12, 2.3 & 46 KV Buses at U.S.N.P. #2 Substation	U.S.N.P. #2 Substation
Muscle Shoals Operation	Wilson Dam	2.3 KV Feeder from Wilson Dam	Wilson Dam
Wholesale Customers:			
Urban:			
Amory, Miss	C & S Interchange	TVA 44 KV Line from Okolona, Miss.	Amory Substation
Amory, Miss	Wilson Dam*	44 KV Line from Pickwick Dam Substation	Amory Substation
Bolivar, Tenn	Wilson Dam*	11 KV Line from Jackson Primary Substation	Bolivar Substation
Dickson, Tenn	C & S Interchange	TVA 44 KV Line from near Athens, Ala.	Dickson Substation
Dickson, Tenn	Wilson Dam*	154 KV Line from Wheeler Dam***	Dickson Substation
Dickson, Tenn	Wilson Dam*	44 KV Line from Columbia Substation	Dickson Substation
Florence, Ala	C & S Interchange	A. P. Co. 11 KV. & 44 KV Systems	Florence Bridge & Florence Central Sub.
Florence, Ala	Wilson Dam*	44 KV Line from Wilson Dam	Reservation Boundary Line
Holly Springs, Miss	Wilson Dam*	11 KV via New Albany-Tupelo 44 KV Line	Holly Springs Substation
Jackson, Tenn	Wilson Dam*	11 KV Line from Jackson Primary Substation	Jackson City Substation
Milan, Tenn	Wilson Dam*	11 KV Line from Jackson Primary Substation	Milan Substation
Muscle Shoals City, Ala	Wilson Dam*	2.3 KV via U.S.N.P. #2 Substation	Reservation Boundary Line
Sheffield, Ala	Wilson Dam*	2.3 KV from Fertilizer Works Substation	Nyhoff & Sheffield Substations
Somerville, Tenn	Wilson Dam*	11 KV Line from Jackson Primary Substation	Somerville Substation
Tupelo, Miss	C & S Interchange	TVA 44 KV Line from Okolona, Miss.**	Tupelo Substation
Tupelo, Miss	Wilson Dam*	44 KV Line from Pickwick Dam Substation	Tupelo Substation
Municipalities also Serving Rural:			
Athens, Ala	C & S Interchange	TVA 44 KV Line from Decatur Primary Substation	Athens Central Substation Athens District Substation
Dayton, Tenn	C & S Interchange	T.E.P. Co. 22 KV Bus at Athens, Tenn. Substation	Dayton Substation
New Albany, Miss	Wilson Dam*	11 KV via Tupelo Substation	Union County Line
New Albany, Miss	Wilson Dam*	11 KV via New Albany-Tupelo 44 KV Line	New Albany District Substation
Okolona, Miss	C & S Interchange	TVA 44 KV Line from Okolona, Miss.	Okolona Substation
Okolona, Miss	Wilson Dam*	44 KV Line from Pickwick Dam Substation	Okolona Substation
Pulaski, Tenn	C & S Interchange	TVA 44 KV Line from near Athens, Ala.	Pulaski Substation
Pulaski, Tenn	Wilson Dam*	154 KV Line from Wheeler Dam***	Pulaski Substation
Pulaski, Tenn	Wilson Dam*	44 KV Line from Columbia Primary Substation	Pulaski Substation

* Wilson-Norris Hydro System from July 28 through November 8, 1936. Wilson-Norris-Wheeler Hydro System after November 8, 1936.

** Property acquired from Mississippi Power Company under Contract of January 4, 1934.

*** Operated part of year at 44 KV.

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DEFENDANTS' EXHIBIT No. 147

[fol. 4342]

Analysis of Power Disposition and Use by TVA

Part II

Calendar Year 1936 (Continued)

Sheet 14

Wholesale Customers (Continued)	Normal Source of Energy	Method of Delivery	Point of Delivery
Cooperatives Serving Rural			
Aleorn E.P.A., Miss.	Wilson Dam*	44 KV Line from Pickwick Dam Substation	Corinth Substation
Cullman Co. E.M.C., Ala.	C & S Interchange	11 KV via TVA 44 KV Line Hartselle to Decatur Primary Sub.##	Cullman-Morgan Co. Line
Duck River E.M.C., Tenn.	Wilson Dam*	11 KV Line from Lincoln County	Lincoln-Bedford Co. Line
Gibson Co. E.M.C., Tenn.	Wilson Dam*	11 KV Line from Jackson Primary Substation	Madison-Gibson County Line
Meigs Co. E.M.C., Tenn.	C & S Interchange	T.E.P. Co. 22 KV Bus at Athens, Tenn. Substation	Decatur, Tenn., Substation
Middle Tenn., E.M.C.	Wilson Dam*	11 KV from Columbia Primary Sub. via Duck River E.M.C.	Midland, Tenn.
Monroe Co. E.P.A., Miss.	C & S Interchange	11 KV via TVA 44 KV Line from Okolona, Miss.	Amory Substation
Monroe Co. E.P.A., Miss.	Wilson Dam*	11 KV via 44 KV Line from Pickwick Dam Substation	Amory Substation
North Georgia E.M.C., Ga.	C & S Interchange	T.E.P. Co. 11 KV System	Ooltewah Substation
Pickwick E.M.C., Tenn.	Wilson Dam*	6.9 KV Line from Pickwick Dam Substation	Pickwick Dam Substation
Pickwick E.M.C., Tenn.	Wilson Dam*	Aleorn E.P.A. 11 KV System	Miss.-Tenn. State Line
Pontotoc E.P.A., Miss.	Wilson Dam*	11 KV from Tupelo Substation via Tombigbee E.P.A.	Pontotoc County Line
Pontotoc E.P.A., Miss.	Wilson Dam*	11 KV from New Albany Substation	Pontotoc County Line
Prentiss Co. E.P.A., Miss.	Wilson Dam*	44 KV Line from Pickwick Dam Substation	Booneville Substation
Tishomingo Co. E.P.A., Miss.	Wilson Dam*	44 KV Line from Pickwick Dam Substation	Iuka Substation
Tombigbee E.P.A., Miss.	Wilson Dam*	44 KV Line from Pickwick Dam Substation	Tupelo Substation

* Wilson-Norris Hydro System from July 28, through November 8, 1936. Wilson-Norris-Wheeler Hydro System after November 8, 1936.

Property acquired from Alabama Power Company under Contract of January 4, 1934, plus TVA extensions.

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DEFENDANTS' EXHIBIT No. 147

[fol. 4343

Analysis of Power Disposition and Use by TVA

Part II

Calendar Year Through October, 1937

Sheet 15

Direct Service:	Source of Energy	Method of Delivery	Point of Delivery
Industrial:			
Alabama Asphaltic Limestone (Colbert)	Hydro System	44 KV Line from Wilson Dam#	Margerum Substation
Goodyear Decatur Mills, Alabama	C & S Interchange	TVA 44 KV Line from Decatur Primary Substation#	Goodyear Mills Substation
L & N Railroad Shops, Alabama	C & S Interchange	TVA 44 KV Line from Decatur Primary Substation#	L & N Shops Substation
Robbins Tire & Rubber Co. (Colbert)	Hydro System	11 KV Feeder from Fertilizer Works Substation	Substation on Customer's Property
Robbins Tire & Rubber Co. (Colbert)	Hydro System	11 KV from Colbert Substation	Substation on Customer's Property
Rockwood Ala. Stone Co., Alabama	Hydro System	44 KV Line from Wilson Dam#	Rockwood Substation
Wade & Richey Mining Company	Hydro System	44 KV Line from Wilson Dam#	Rockwood Substation
Aluminum Company of America	Hydro System	154 KV Line Norris Dam to Alcoa, Tennessee	Alcoa Substation
Monsanto Chemical Company	Hydro System	44 KV Lines from Columbia Primary Substation	Monsanto Substation
Temporary Rural:			
Alabama Power District	Hydro System	2.3 & 11 KV via TVA 44 KV Line from Wilson Dam##	Ultimate Consumer Meters
Alabama Power District	C & S Interchange	2.3 & 11 KV via TVA 44 KV Line from Decatur Primary Sub.##	Ultimate Consumer Meters
Colbert County, Alabama	Hydro System	11 KV Feeder from Fertilizer Works Substation	Ultimate Consumer Meters
Colbert County, Alabama	Hydro System	11 KV from Colbert Substation	Ultimate Consumer Meters
Lauderdale County, Alabama	Hydro System	11 KV via 44 KV Line from Wilson Dam##	Ultimate Consumer Meters
Lincoln County, Tennessee	Hydro System	11 KV via 44 KV Line from Columbia Primary Substation	Ultimate Consumer Meters
Government Res. & Uses:			
Chickamauga Dam Construction	C & S Interchange	T.E.P. Co. 44 KV System	Chickamauga Dam Substation
Chickamauga Dam Construction	Hydro System	44 KV Line from Watts Bar Substation	Chickamauga Dam Substation
Fertilizer Works (Muscle Shoals)	Hydro System	2.3 & 12 KV via U.S.N.P. #2 Substation	Fertilizer Works Substation
Guntersville Village, Alabama	Hydro System	11 KV from Guntersville Dam Substation	Ultimate Consumer Meters
Guntersville Dam Construction	Hydro System	TVA 154 KV System	Guntersville Dam Substation
Hiwassee Village, N. C.	Aluminum Company Interchange	2.3 KV from Hiwassee Dam Substation	Ultimate Consumer Meters
Hiwassee Dam Construction	Aluminum Company Interchange	TVA 44 KV Line from Santeetlah Dam	Hiwassee Dam Substation
Muscle Shoals Operations	Wilson Dam	2.3 KV via U.S.N.P. #2 Substation	Fertilizer Works Substation
Muscle Shoals Operations	Hydro System	12 2.3 & 46 KV Buses at U.S.N.P. #2 Substation	U.S.N.P. #2 Substation
Muscle Shoals Operations	Wilson Dam	2.3 KV Feeder from Wilson Dam	Wilson Dam
Navigation Locks	Wilson Dam	2.3 KV Feeder from Wilson Dam	Wilson Dam Lock #2
Navigation Locks	Wheeler Dam	2.3 KV Feeder from Wheeler Dam	Wheeler Dam Lock #3
Norris Townsite, Tennessee	C & S Interchange	T.E.P. Co. 66 KV System	Clinch River Substation
Norris Dam Construction	C & S Interchange	T.E.P. Co. 66 KV System	Clinch River Substation
Pickwick Village, Tennessee	Hydro System	2.3 KV Feeder from Pickwick Dam Substation	Ultimate Consumer Meters
Pickwick Dam Construction	Hydro System	110 KV Line from Wilson Dam	Pickwick Dam Substation
Wheeler Village, Alabama	Wheeler Dam	2.3 KV Feeder from Wheeler Dam	Ultimate Consumer Meters
Wheeler Dam Construction	Wheeler Dam	2.3 KV Feeder from Wheeler Dam	Wheeler Dam

Property acquired from Alabama Power Company under contract of January 4, 1934.

Property acquired from Alabama Power Company under contract of January 4, 1934, plus TVA extensions.

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DEFENDANTS' EXHIBIT No. 147

[fol. 4344]

Analysis of Power Disposition and Use by TVA

Part II

Calendar Year Through October, 1937 (Continued) /

Sheet 16

Wholesale Customers:	Source of Energy	Method of Delivery	Point of Delivery
Urban:			
Amory, Mississippi	Hydro System	44 KV Line from Pickwick Dam Substation	Amory Substation
Bolivar, Tennessee	Hydro System	11 KV Line from Jackson Primary Substation	Bolivar Substation
Dickson, Tennessee	Hydro System	44 KV Line from Columbia Primary Substation	Dickson Substation
Florence, Alabama	Hydro System	44 KV Line from Wilson Dam	Reservation Boundary Line
Holly Springs, Mississippi	Hydro System	11 KV via New Albany-Tupelo 44 KV Line	Holly Springs Substation
Jackson, Tennessee	Hydro System	11 KV Line from Jackson Primary Substation	Jackson City Substation
Milan, Tennessee	Hydro System	11 KV Line from Jackson Primary Substation	Milan Substation
Muscle Shoals City, Alabama	Hydro System	23 KV via U.S.N.P. #2 Substation	Reservation Boundary Line
Muscle Shoals City, Alabama	Hydro System	11 KV from Colbert Substation	Reservation Boundary Line
Sheffield, Alabama	Hydro System	23 KV from Fertilizer Works Substation	Nyhoff & Sheffield Substation
Sheffield, Alabama	Hydro System	11 KV from Colbert Substation	Colbert Substation
Sheffield, Alabama	Hydro System	Plant #1 4.0 KV Bus via Fertilizer Works 12 KV Feeder	Plant #1 Substation
Somerville, Tennessee	Hydro System	11 KV Line from Jackson Primary Substation	Somerville Substation
Tupelo, Mississippi	Hydro System	44 KV Line from Pickwick Dam Substation	Tupelo Substation
Tuscumbia, Alabama	Hydro System	11 KV Line from Fertilizer Works Substation	Tuscumbia Substation
Tuscumbia, Alabama	Hydro System	11 KV from Colbert Substation	Tuscumbia Substation
Municipalities Also Serving Rural:			
Athens, Alabama	C & S Interchange	TVA 44 KV Line from Decatur Primary Substation*	Athens District Substation
Dayton, Tennessee	C & S Interchange	T.E.P. Co. 22 KV Bus at Athens, Tenn. Substation	Dayton Substation
Dayton, Tennessee	Hydro System	44 KV Line from Watts Bar Substation	Dayton Substation
New Albany, Mississippi	Hydro System	11 KV via Tupelo-New Albany 44 KV Line	New Albany District Substation
Okolona, Mississippi	Hydro System	44 KV Line from Pickwick Dam Substation	Okolona Substation
Pulaski, Tennessee	Hydro System	44 KV Line from Columbia Primary Substation	Pulaski Substation
Cooperatives Serving Rural:			
Alcorn E.P.A., Mississippi	Wilson Dam Hydro System	44 KV Line from Pickwick Dam Substation	Corinth Substation
Cullman Co. E.M.C., Alabama	C & S Interchange	11 KV via TVA 44 KV Line Hartselle to Decatur Primary Substation**	Cullman-Morgan County Line
Duck River E.M.C., Tennessee	Hydro System	11 KV from Columbia Primary Substation	Columbia Primary Substation
Gibson Co. E.M.C., Tennessee	Hydro System	11 KV Line from Jackson Primary Substation	Madison-Gibson County Line
Meigs Co. E.M.C., Tennessee	Hydro System	11 KV Line from Watts Bar Substation	Watts Bar Substation
Middle Tennessee E.M.C.	Hydro System	11 KV from Columbia Primary Substation via Duck River EMC	Midland, Tennessee
Monroe County E.P.A., Mississippi	Hydro System	44 KV Line from Pickwick Dam Substation	Amory Substation
North Georgia E.M.C., Georgia	Hydro System	11 KV Line from Watts Bar Substation	Friendship Substation
Pickwick E.M.C., Tennessee	Hydro System	6.9 KV Line from Pickwick Dam Substation	Pickwick Dam Substation
Pickwick E.M.C., Tennessee	Hydro System	Alcorn E.P.A. 11 KV System	Mississippi-Tennessee State Lines
Pontotoc E.P.A., Mississippi	Hydro System	11 KV from Tupelo Substation via Tombigbee E.P.A.	Pontotoc County Line
Pontotoc E.P.A., Mississippi	Hydro System	11 KV from New Albany Substation	Pontotoc County Line
Prentiss County E.P.A., Mississippi	Hydro System	44 KV Line from Pickwick Dam Substation	Booneville Substation

* Property acquired from Alabama Power Company under contract of January 4, 1934.

** Property acquired from Alabama Power Company under contract of January 4, 1934, plus TVA extensions.

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DEFENDANTS' EXHIBIT No. 147

(fol. 4345)

Analysis of Power Disposition and Use by TVA

Part II

Calendar Year Through October, 1937 (Continued)*

Sheet 17

	Source of Energy	Method of Delivery	Point of Delivery
Cooperatives Serving Rural (Continued):			
Southwest Tennessee E.M.C., Tennessee	Hydro System	11 KV Bus from Jackson Primary Substation	Jackson Primary Substation
Tishomingo Co. E.P.A., Mississippi	Hydro System	44 KV Line from Pickwick Dam Substation	Iuka Substation
Tombigbee E.P.A., Mississippi	Hydro System	44 KV Line from Pickwick Dam Substation	Tupelo Substation
Joe Wheeler E.M.C., Alabama	Hydro System	44 KV Line Wilson Dam to Moulton Substation*	Moulton District Substation
Joe Wheeler E.M.C., Alabama	C & S Interchange	44 KV Line Decatur Primary Substation to Hartselle Substation*	Hartselle District Substation

* Property acquired from Alabama Power Company under contract of January 4, 1934.

12-30-37

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[fol. 4346]

DEFENDANTS' EXHIBIT No. 148

Use of Norris and Wheeler Dams for Power Supplied to Commonwealth and Southern Companies

June Through December, 1936

	June	July	August	September	October	November	December	7 Month Total
1. Wilson Dam Net Generation—Kwh.....	69,370,305	105,371,028	82,864,379	81,574,275	76,950,317	92,928,950	79,379,495	588,438,749
Estimated Generating Ability of Wilson Dam in Accordance with Daily System Load Requirements*								
2. (a) With Norris Storage Releases—Kwh**.....	69,370,305	105,469,228	83,218,579	81,574,275*	79,950,917	93,124,050	88,245,295	600,952,649
3. (b) Without Norris Storage Releases—Kwh.....	67,809,605	103,233,128	74,787,579	64,432,875	71,827,317	89,555,850	80,587,055	552,233,409
4. Sales to C & S Companies—Kwh.....	51,820,214	89,627,600	84,736,309	88,520,774	66,827,853	98,757,388	72,272,230	552,562,368
Sales to C & S Companies Expressed as a Percentage of Wilson Dam Generating Ability Shown Above:								
5. (a) With Norris Storage Releases—%.....	74.70	84.98	101.82	108.51	83.59	106.05	81.90	91.95
6. (b) Without Norris Storage Releases—%.....	76.42	86.82	113.30	137.38	93.04	110.27	89.68	100.06
7. Total Hydro System Net Generation—Kwh***.....	69,370,305	108,518,828	105,292,539	111,779,435	84,971,877	115,708,590	97,611,355	693,252,929
Wilson Dam Generating Ability Shown Above Expressed as a Percentage of the Total Hydro System Net Generation:								
8. (a) With Norris Storage Releases—%.....	100.00	97.19	79.04	72.98	94.09	80.48	90.40	86.63
9. (b) Without Norris Storage Releases—%.....	97.75	95.13	71.03	57.64	84.53	77.40	82.56	79.66
10. Total TVA System Sales—Kwh.....	65,816,843	104,332,140	100,184,204	106,118,798	80,393,490	111,811,128	93,514,747	662,171,350
11. Sales to C & S Companies Expressed as a Percentage of Total TVA System Sales—%.....	78.73	85.91	84.58	83.42	83.13	88.33	77.28	83.45

* These figures show the generating ability of Wilson Dam in accordance with daily system load requirements by giving preference to any Wilson Dam generation that could have been utilized from spillway discharges in place of actual generation at Norris and Wheeler Dams.

** Norris storage releases are the discharges below Norris Dam less natural flow of Clinch River at the site of Norris Dam.

*** Norris Dam generation included on and after July 28, 1936 and Wheeler Dam generation included on and after November 9, 1936, the respective initial dates of operation.

No water was discharged through the spillway gates at Wilson Dam from August 15 through October 4, 1936.

[fol. 4347]

DEFENDANTS' EXHIBIT No. 149

Hydro System Power Data
Calendar Years 1926 Through 1937

Calendar Year	Kwh. Available	Kwh. Generated	Kwh. Not Used	Kwh. Sold
1926.....	936,300,000	439,379,300	496,920,700	432,629,000
1927.....	763,500,000	565,609,500	197,890,500	557,025,000
1928.....	1,339,400,000	222,096,800	1,117,303,200	216,859,000
1929.....	1,349,000,000	171,681,600	1,177,318,400	165,821,000
1930.....	801,200,000	306,119,200	495,080,800	299,260,000
1931.....	836,600,000	345,603,400	490,996,600	339,424,000
1932.....	1,141,900,000	288,638,000	853,262,000	280,619,000
1933.....	1,244,946,000	287,862,300	957,083,700	280,981,538
1934.....	1,352,559,000	206,684,400	1,145,874,600	189,834,600
1935.....	1,316,980,000	394,706,000	922,274,000	368,602,808
1936.....	1,462,810,000	778,358,800	683,951,200	733,300,674
1937.....	2,269,961,000	501,788,800	1,768,172,200	442,693,018

Note: Hydro System Installed Capacity:

Year 1926 to July 28, 1936—184,000 kw. (Wilson Dam)

July 28, 1936 to September 30, 1936—234,000 kw. (50,000 kw. at Norris Dam added)

September 30, 1936 to November 9, 1936—284,000 kw. (50,000 kw. at Norris Dam added)

November 9, 1936 to April 14, 1937—316,000 kw. (32,000 kw. at Wheeler Dam added)

April 14, 1937 to date—348,000 kw. (32,000 kw. at Wheeler Dam added)

[fol. 4348]

DEFENDANTS' EXHIBIT No. 150

Stipulation

It is hereby stipulated and agreed by counsel for the respective parties hereto that:

1. Continuously since the completion of Wilson Dam in September 1925, the complainant Alabama Power Company has had a 154 kv. transmission line interconnected with Wilson Dam, and since 1930 the complainant Tennessee Electric Power Company has interconnected at that point with the dam and with the Alabama Power Company by means of a 154 kv. transmission line owned and operated by the Southern Tennessee Electric Power Company.

2. Since 1925 the Mississippi Power Company has been interconnected with the system of the Alabama Power Company and has purchased substantial quantities of power from that company.

DEFENDANTS' EXHIBIT No. 150

3. From 1921 until January 4, 1934, the Alabama Power Company paid the following sums to the Government of the United States for power and use of facilities, namely:

[fol. 4349]

U. S. Nitrate Plant No. 2	Net Energy (k.w.h.)	Total Payments by Years	
1921.....		\$10,000.00	
1922.....	44,136,705	208,273.41	
1923.....	46,910,411	213,820.81	
1924.....	16,403,967	152,807.93	
1925.....	136,914,763	393,829.54	
1926.....	20,185,370	160,370.75	
1927.....	16,943,801	153,887.60	
1928.....		120,000.00	
1929.....		120,000.00	
1930.....		120,000.00	
1931.....		35,000.00	
1932.....		18,000.00	
1933.....		18,000.00	
Total.....	281,495,017	\$1,723,990.04	1,723,990.04

Waco Substation

1923.....	750.00
1924.....	1,800.00
1925.....	1,800.00
1926.....	1,800.00
1927.....	1,800.00
1928.....	900.00

8,850.00

Wilson Dam

Year	k.w.h.	Actual Payments
1925 (4 mos.).....	44,429,000	82,953.37
1926.....	432,629,000	890,617.47
1927.....	557,025,000	1,171,763.33
1928.....	216,859,000	454,285.87
1929.....	165,821,000	500,000.00
1930.....	299,260,000	597,012.41
1931.....	339,424,000	677,265.56
1932.....	280,619,000	560,000.00
1933.....	279,977,588	560,000.00
1934 (4 days).....	2,190,181	4,380.36

Total..... 2,618,233,769 \$5,498,278.37 5,498,278.37

Total—all payments..... \$7,231,118.41

[fol. 4350] 4. The only interconnections which the two complainant companies, namely, Alabama Power Company and The Tennessee Electric Power Company, had for the delivery of power to them from the Tennessee Valley Authority are the aforesaid interconnections at Wilson Dam.

5. The generating plants at Norris and Wheeler Dams were interconnected with Wilson Dam and placed in opera-

DEFENDANTS' EXHIBIT No. 150

tion as parts of the Tennessee Valley Authority system on July 28, 1936, and November 9, 1936, respectively.

6. These two complainant companies were informed on or about the aforesaid dates that the generating plants at Norris and Wheeler Dams, respectively, were completed; and complainants knew that Norris Dam was in production and interconnected with Wilson Dam in October 1936, and that Wheeler Dam was in production and interconnected with Wilson Dam some time in November 1936. A true copy of letter written by John C. Weadock, General Counsel of The Commonwealth & Southern Corporation, to James Lawrence Fly, General Counsel of Tennessee Valley Authority, under October 24, 1936, is attached hereto as "Exhibit A." A true copy of a letter written by James Lawrence Fly, General Counsel of Tennessee Valley Authority, to John C. Weadock, General Counsel for The Commonwealth & Southern Corporation, under date of October 31, 1936, is attached hereto as "Exhibit B." A true copy of a letter written by Wendell L. Willkie, President of The Commonwealth & Southern Corporation, to David E. Lilienthal, Director of the Tennessee Valley Authority, under date of November 13, 1936, is attached hereto as "Exhibit C." A true copy of a letter written by James Lawrence Fly, General Counsel of the Tennessee Valley Authority, to Wendell L. Willkie, President of The Commonwealth & Southern Corporation, under date of November 17, 1936, is attached hereto as "Exhibit D."

[fol. 4351] 7. The two complainant companies, namely, Alabama Power Company and The Tennessee Electric Power Company, through their aforesaid interconnections through Wilson Dam have purchased power from the Tennessee Valley Authority in the following amounts:

Alabama Power Company	1934	110,127,068 kwh.
	1935	164,127,787 kwh.
	1936	344,308,127 kwh.
Tennessee Electric Power Company	1934	39,514,200 kwh.
	1935	76,022,503 kwh.
	1936	212,313,103 kwh.

8. These two complainant companies, namely, Alabama Power Company and The Tennessee Electric Power Com-

DEFENDANTS' EXHIBIT No. 150

pany, purchased substantial amounts of power from the Authority in each of the last seven months of the year 1936 under the contract of January 4, 1934.

9. Alabama Power Company paid to the Authority a total of \$479,573.67 for power purchased from the Authority prior to January 4, 1934, under a contract previously made with the War Department and not under the Tennessee Valley Authority contract. Alabama Power Company and The Tennessee Electric Power Company paid to the Authority an aggregate of \$1,814,918.04 for power purchased from the Authority under the contract of January 4, 1934, for the period from January 4, 1934, to February 3, 1937. The above \$479,573.67 is included in tabulation on page 2.

10. Complainant Alabama Power Company is currently purchasing power from the Tennessee Valley Authority in accordance with the closing agreement under the contract of January 4, 1934, and taking delivery from the Tennessee Valley Authority by means of its said interconnection through Wilson Dam and over the transmission lines purchased from the Alabama Power Company under the contract of January 4, 1934, to supply urban properties in the ceded area formerly supplied by the transmission lines sold [fol. 4352] to the Tennessee Valley Authority.

Baker, Hostetler, Sidlo & Patterson, Frantz, Mc-Connell & Seymour, Trabue, Hume & Armistead, by S. D. L. Jackson, Jr., Solicitors for Complainants. John Lord O'Brian, Solicitor for Defendants.

[fol. 4353]

"Exhibit A"

Copy

Weadock & Whiting, Attorneys, Twenty Pine Street,
New York City

Telephone JOhn 4-5560

October 24, 1936.

John C. Weadock, Justin R. Whiting, Chas. W. Reichhard
James Lawrence Fly, Esq., General Counsel, Tennessee
Valley Authority, Knoxville, Tennessee.

DEAR MR. FLY:

In our Cleveland conference you objected to including any reference to TVA letting electric energy generated at

DEFENDANTS' EXHIBIT No. 150

Norris Dam flow upon the power companies transmission lines and the reference made thereto in the proposal submitted to you. I informed you of our opinion that under the contract of January 4, 1934, as amended, the power companies agreed to take power and exchange for power generated at Wilson Dam and not elsewhere and it having been intimated that in any litigation complaining of the acts of the TVA, its directors, officers and agents it may be claimed that the power companies are receiving benefit from the TVA which might estop them from complaining and I told you that because of such intimation the power companies protested against the TVA letting electric energy flow upon the power companies transmission lines and that formal notice thereof would be given.

I started to draft a formal notice and protest along the lines stated to you but it occurred to me that it will be quite enough if I confirm in writing to you that the power companies do protest and object to the TVA letting any electric energy generated at Norris Dam or any place other than Wilson Dam on to their lines and unless you advise me that this letter will not be regarded as sufficient for my purpose no further or formal notice will be given.

Your attention in this regard is particularly called to the provisions of Section 9 of the contract of January 4, 1934, which fixes the points at which the TVA is to supply power to the power companies and clearly refers to points from which power coming from Wilson Dam only could be supplied.

Mr. Wilkie tells me that the power companies will do everything possible to aid in the exploration of the feasibility of a power pool as suggested by the President at the recent White House conference. He has asked me, however, in the meantime to see that nothing is done which may estop the power companies in the present action of the Tennessee Electric Power Co. et al. v. Tennessee Valley Authority, et al. or in any other action from enforcing their rights. It had not occurred (sic) to us until the intimation referred to that there was any need for protesting and objecting about Norris Dam power. We would much prefer to obtain an assurance that nothing would be claimed in such litigation.

Very truly yours, (S.) Jno. C. Weadock.

DEFENDANTS' EXHIBIT No. 150

[fol. 4354]

"Exhibit B"

Copy

October 31, 1936.

Judge John C. Weadock, Weadock & Whiting, 20 Pine Street, New York City.

DEAR JUDGE WEADOCK :

I have your letter of October 24 stating that the power companies in the C. & S. system protest and object to the TVA letting any electric energy generated at Norris Dam, or any place other than Wilson Dam, onto their lines. I agree with you that your letter is adequate notice of your views and that nothing will be served by giving further or formal notice.

However, as Mr. Lilienthal pointed out to Mr. Wilkie in Washington two weeks ago, and as I pointed out to you at our Cleveland meeting, the power companies have at all times been fully aware of the amount of our generation and water releases at Norris Dam, that all our power is pooled and it is impracticable to segregate Norris from Wilson power, and that the Authority could not have delivered the amounts of power the companies have been taking in the current low water period except for such releases and generation. The amount purchased by you has been a matter in your discretion.

Our contract requires the Authority to supply you with "all of its surplus hydro-electric power," and you therefore have the right to purchase as much power, from all hydro-electric sources, as we have available after satisfying the Authority's other requirements. Our Board feels that it has no alternative but to perform its obligations consistently with the agreements between the parties and the extended practice pursuant thereto.

With kind regards to you, I am

Very truly yours, James Lawrence Fly, General Solicitor.

JLF:KK

DEFENDANTS' EXHIBIT No. 150

[fol. 4355]

"Exhibit C"

Copy

The Commonwealth & Southern Corporation,
Twenty Pine Street, New York

Wendell L. Willkie, President.

November 13th, 1936.

Mr. David E. Lilienthal, Director, Tennessee Valley Authority, Knoxville, Tennessee.

MY DEAR MR. LILIENTHAL:

Under date of November 9, 1936, Mr. Fly wired me as follows:

"This will confirm our conversation of November sixth regarding the requested interchange at Arlington and the temporary outage on one of the lines of the Alabama Power Company to permit our crossing that line without undue hazard or expense (paragraph) This will confirm on behalf of myself and my associates and on behalf of the Authority the statement which I made to you that neither of these transactions will be mentioned in the course of litigation or will be relied on in any way as against the Commonwealth & Southern Corporation or any of its related companies in any case in which any such company is a party (Stop) Kindly confirm to me by wire Washington office."

To which under date of November 10, 1936 I replied by wire as follows:

"Pursuant to your application (comma) report of Mr. Longley and your engineer and Mister Fly's wire of last night to Mr. Weadock we grant you the exchange point at Arlington as described in your application and the wire crossing in Alabama (Stop) Will you kindly have your engineers get in touch with Mr. J. A. Longley Tennessee Electric Power Company and Mr. J. M. Barry Alabama Power Company to work out details of the respective matters (Stop) Letter follows."

which is hereby confirmed.

I, of course, want again to say that the granting of your request for the exchange point at Arlington and the crossing

DEFENDANTS' EXHIBIT No. 150

in Alabama under the contract of January 4, 1934, is not to be construed as giving consent to your putting power generated elsewhere than at Wilson Dam as constructed and operated at the date of the said contract upon the lines of the "Power Companies," parties thereto, at any point and our protest against your so doing is hereby renewed and emphasized.

I understand you are leaving on a short vacation tomorrow and I hope you will have a good rest.

Sincerely yours, (S.) Wendell L. Willkie, President.

WLW:FAR.

gt.

[fol. 4356]

"Exhibit D"

Copy

November 17, 1936.

Mr. Wendell L. Willkie, President, The Commonwealth & Southern Corporation, 20 Pine Street, New York.

DEAR MR. WILLKIE:

In Mr. Lilienthal's absence, your letter of November 13 has been drawn to my attention. I discussed the contents of your letter with Mr. Lilienthal by telephone, and he has suggested that I make this response.

We are in agreement as to the terms of the arrangement for the Arlington interchange and the crossing in Alabama, as set forth in your letter. In accordance with the agreement, we do not intend to rely upon either of these transactions as against your companies in the course of litigation as regards the transmission of power from sources other than Wilson Dam.

As to your renewal of the more general protest regarding the propriety of our putting power from the new dams onto the lines of your companies, we believe that our position is satisfactorily spelled out in my letter to Judge Weadock under date of October 31, 1936, which was in response to his letter of October 24.

Sincerely yours, James Lawrence Fly, General Solicitor.

JLF:LJ.

CC: Mr. Lilienthal
Mr. Blandford

[fol. 4357] DEFENDANTS' EXHIBIT No. 151

Storage in TVA Mainstream Projects

(In acre-feet)

Project	Total Volume in pool (at navigation level)*	Flood Storage*
Gilbertsville	1,530,000	4,600,000
Pickwick	616,000	416,000
Wheeler	680,000	440,000
Guntersville	709,000	242,000
Chickamauga	314,000	325,000
Watts Bar	795,000	337,000
Coulter Shoals	230,000	140,000
Total	4,874,000	6,500,000

* Figures taken from Defendants' Exhibits 39, 42, 43, 45, 46, 47, 48.

[fol. 4358] DEFENDANTS' EXHIBIT No. 152

Excerpts from pages 71 to 73 of House Document No. 328

42. Reduction of flood heights by storage reservoirs and surcharge pondage.—In order to determine the reduction of flood heights which may be secured by storage reservoirs and surcharge pondage, the effect which such projects would have upon flood heights on the main stream have been traced downstream from the source of the main stream to its mouth for 10-foot surcharge on Tennessee projects and for certain reservoir projects for the 1926 flood. For this purpose seven cases illustrating the effects which these projects would have had during the 1926 flood were determined as follows:

Case I. Effect of Cove Creek storage.

Case II. Effect of Tennessee River projects operated at normal pool elevation.

Case III. Effect of surcharge pondage secured by 10-foot surcharge on Tennessee River projects in addition to Cove Creek storage.

Case IV. Effect of surcharge pondage secured by 15-foot surcharge on Tennessee River projects in addition to Cove Creek.

DEFENDANTS' EXHIBIT No. 152

Case V. Effect of all storage projects of the entire system and Tennessee River projects operated at normal pool elevation.

Case VI. Effect of all storage projects of the entire system and surcharge pondage secured by 10-foot surcharge on Tennessee River projects.

Case VII. Effect of high dams at Chickamauga, Dam No. 3, and Aurora Landing, assuming reservoirs full at the beginning of flood and normal pool elevation maintained.

The methods employed and the results obtained are shown in detail in Part II, Appendix B, report on partial survey of the Tennessee River and its tributaries, printed in House Document No. 185, Seventieth Congress, first session. Tabulated effect of operations is as follows:

(Here follows one photolithograph, side folio 4359)

Defendants' Exhibit No. 152

Effect on flood stages—1926 flood

Operation	Knorrville stage (feet)			London stage (feet)			Rockwood stage (feet)		
	Natural	Modified	Increase or decrease	Natural	Modified	Increase or decrease	Natural	Modified	Increase or decrease
Case I.....							25.0	18.4	-6.6
Case II.....	14.8	14.8	0	20.5	21.7	+1.2	25.0	26.0	+1.0
Case III.....	14.8	14.8	0	20.5	17.6	-2.9	25.0	14.7	-10.3
Case IV.....	14.8	14.8	0	20.5	15.8	-4.7	25.0	13.1	-11.9
Case V.....	14.8	6.8	-8.0	20.5	10.5	-10.0	25.0	14.6	-10.4
Case VI.....	14.8	6.8	-8.0	20.5	5.5	-15.0	25.0	10.1	-14.9

Operation	Chattanooga stage (feet)			Florence stage (feet)			Johnsonville stage (feet)		
	Natural	Modified	Increase or decrease	Natural	Modified	Increase or decrease	Natural	Modified	Increase or decrease
Case I.....	38.4	32.7	-5.7	26.4	24.6	-1.8	40.5	38.9	-1.6
Case II.....	38.4	39.2	+ .8	26.4	26.8	+ .4	40.5	43.5	+3.0
Case III.....	38.4	26.3	-12.1	26.4	20.3	-6.1	40.5	32.5	-8.0
Case IV.....	38.4	22.4	-16.0	26.4	17.2	-9.2	40.5	27.4	-13.1
Case V.....	38.4	28.0	-10.4	26.4	22.9	-3.5	40.5	42.6	+2.1
Case VI.....	38.4	17.6	-20.8	26.4	16.8	-9.6	40.5	27.7	-12.8
Case VII.....	38.4	40.1	+1.7	26.4	29.2	+2.8	40.5	60.0	+19.5

Flood storage on Tennessee River

Project	Miles above mouth	Crest elevation	✓ Total volume in pool	1926 flood		Maximum flood		✓ Flood storage provided by 10-foot surcharge
				Natural flood storage in channel	Natural flood storage eliminated	Natural flood storage in channel	Natural flood storage eliminated	
PROPOSED DAMS								
Aurora Landing.....	42	352	D. s. f. 775,000	D. s. f. 1,525,000	D. s. f. 700,000	D. s. f. 2,400,000	D. s. f. 775,000	D. s. f. 505,000
Pickwick Landing.....	206	408	285,000	615,000	260,000	875,000	285,000	210,000
Dam No. 2.....	259	505	250,000	225,000	100,000	325,000	160,000	
Dam No. 3.....	275	549	285,000	605,000	235,000	940,000	250,000	215,000
Guntersville.....	357	589	203,000	558,000	203,000	900,000	203,000	168,000
Hales Bar.....	431	626	50,000	155,000	50,000	450,000	50,000	0
Chickamauga.....	472	676	225,000	205,000	190,000	750,000	225,000	198,000
White Creek.....	543	714	68,000	83,000	63,000	220,000	68,000	73,000
						105,000	35,000	35,000

Case I.....	14.8	14.8	0	20.5	21.7	+1.2	25.0	18.4	-6.6
Case II.....	14.8	14.8	0	20.5	17.6	-2.9	25.0	20.0	+1.0
Case III.....	14.8	14.8	0	20.5	15.8	-4.7	25.0	14.7	-10.3
Case IV.....	14.8	14.8	0	20.5	10.5	-10.0	25.0	12.1	-11.9
Case V.....	14.8	6.8	-8.0	20.5	5.5	-15.0	25.0	14.6	-10.4
Case VI.....	14.8	6.8	-8.0	20.5	5.5	-15.0	25.0	10.1	-14.9

Operation	Chattanooga stage (feet)			Florence stage (feet)			Johnsonville stage (feet)		
	Natural	Modified	Increase or decrease	Natural	Modified	Increase or decrease	Natural	Modified	Increase or decrease
Case I.....	38.4	32.7	-5.7	26.4	24.6	-1.8	40.5	38.9	-1.6
Case II.....	38.4	30.2	+8	26.4	26.8	+4	40.5	43.5	+3.0
Case III.....	38.4	26.3	-12.1	26.4	20.3	-6.1	40.5	32.5	-8.0
Case IV.....	38.4	22.4	-16.0	26.4	17.2	-9.2	40.5	27.4	-13.1
Case V.....	38.4	28.0	-10.4	26.4	22.9	-3.5	40.5	42.6	+2.1
Case VI.....	38.4	17.6	-20.8	26.4	16.8	-9.6	40.5	27.7	-12.8
Case VII.....	38.4	40.1	+1.7	26.4	28.2	+2.8	40.5	60.0	+19.5

Flood storage on Tennessee River

Project	Miles above mouth	Crest elevation	✓ Total volume in pool	1926 flood		Maximum flood		✓ Flood storage provided by 10-foot surcharge
				Natural flood storage in channel	Natural flood storage eliminated	Natural flood storage in channel	Natural flood storage eliminated	
PROPOSED DAMS								
Aurora Landing.....	42	252	D. s. f. 775,000	D. s. f. 1,525,000	D. s. f. 700,000	D. s. f. 2,400,000	D. s. f. 775,000	D. s. f. 505,000
Perkwick Landing.....	206	406	285,000	615,000	290,000	875,000	285,000	210,000
Dam No. 2.....	259	505	250,000	225,000	100,000	325,000	160,000	.....
Dam No. 3.....	275	549	285,000	605,000	235,000	940,000	250,000	215,000
Guntersville.....	357	589	203,000	358,000	203,000	900,000	203,000	168,000
Hales Bar.....	431	626	50,000	155,000	50,000	450,000	50,000	0
Chickamauga.....	472	676	225,000	205,000	190,000	750,000	225,000	198,000
White Creek.....	543	714	68,000	83,000	63,000	220,000	68,000	73,000
Marble Bluff.....	577	747	35,000	40,000	32,000	195,000	35,000	35,000
Coulter Shoals.....	608	802	95,000	55,000	50,000	245,000	95,000	50,000
Total.....			2,271,000	4,086,000	1,883,000	7,300,000	2,140,000	1,454,000
HIGH DAMS								
Aurora Landing.....	42	406	6,927,000	2,140,000	2,000,000	3,275,000	2,690,000	.....
Dam No. 2.....	259	505	250,000	225,000	80,000	325,000	100,000	.....
Dam No. 3.....	275	605	3,795,000	1,163,000	1,060,000	1,840,000	1,327,000	.....
Hales Bar.....	431	626	50,000	155,000	50,000	450,000	50,000	.....
Chickamauga.....	472	714	1,547,000	288,000	273,000	970,000	792,000	.....
Marble Bluff.....	577	757	70,000	40,000	40,000	195,000	70,000	.....
Coulter Shoals.....	608	812	145,000	55,000	55,000	245,000	140,000	.....
Total.....			12,784,000	4,066,000	3,578,000	7,300,000	5,169,000	.....

DEFENDANTS' EXHIBIT No. 152

[fol. 4360] 43. Reduction of flood heights by storage reservoirs only.—The results which may be secured by the use of storage reservoirs only are well illustrated by Case I for Cove Creek alone, and Case V for all storage reservoirs of the system. The effect in reducing the height of floods is greatest immediately below the storage reservoirs. This effect decreases in proportion to the distance (uncontrolled drainage area) below the reservoirs. For Case I, Cove Creek alone, the reduction in flood height for the 1926 flood at Rockwood is 6.6 feet, while at Johnsonville it is 1.6 feet. For Case V, all storage projects and projects on the main stream maintained at normal pool elevation, the reduction in flood heights at Chattanooga is 10.4 feet, while at Johnsonville the gage height is increased over that of the natural flood height by 2.1 feet, due to the effect of projects on the Tennessee River when maintained at normal pool elevation. Without surcharge on projects on the main stream all reservoirs of the entire system could not reduce the height of floods on the lower river.

44. Reduction of flood heights by surcharge pondage.—The results which may be secured by the use of surcharge pondage are well illustrated by Cases III, IV, and VI. For Case III, Cove Creek and 10-foot surcharge pondage on the Tennessee River projects, the reduction in flood heights at Chattanooga is 12 feet and at Johnsonville, 8 feet. For Case VI, all storage projects and only 10-foot surcharge pondage on Tennessee River projects, the reduction in flood heights at Chattanooga is 20.8 feet and at Johnsonville 12.8 feet. The effect of surcharge pondage is, therefore, to eliminate an increase in heights of floods by projects along the main stream and in conjunction with the storage held out by storage reservoirs to reduce the height of floods and transmit this reduction to the lower river.

[fol. 4361] DEFENDANTS' EXHIBIT No. 153

Report of Subcommittee of the Committee on Appropriations on the Independent Offices Appropriation Bill for 1938.

(Original Exhibit)

DEFENDANTS' EXHIBIT No. 154

Annual Report of the Tennessee Valley Authority for the Fiscal Year ending June 30, 1937.

(Original Exhibit)

[fol. 4362] DEFENDANTS' EXHIBIT No. 155

Resolution of Board of Directors of TVA, Adopted
December 20, 1937

Whereas, The Assistant Chief Engineer has recommended that the Authority exercise certain options to purchase the site of the proposed Gilbertsville Dam, camp, and access road, and reservoir land adjacent thereto, involving an estimated expenditure of Seven Hundred and Fifty Thousand Dollars (\$750,000.00), and

Whereas, Authorization to exercise these options is presently necessary inasmuch as several of them expire on December 31, 1937, and the others shortly thereafter, and

Whereas, After investigating and studying the Gilbertsville Project, the Assistant Chief Engineer and the several consulting engineers have recommended a definite location for the site, which is shown on a map filed with the records of the Authority as Exhibit 12-20-37b, and

Whereas, They have also recommended a maximum pool level of not less than elevation 375, therefore

Be it Resolved, That the recommendations fixing a site and establishing a maximum pool level are hereby approved.

Further Resolved, That the recommendation establishing a taking line as shown on the map (Exhibit 12-20-37b), and based upon a maximum pool level at elevation 375, is hereby adopted as a basis for the acquisition of land.

Further Resolved, That upon receipt of approval from the Head of the Maps and Surveys Division, the Director of the Land Acquisition Department is hereby authorized and directed to exercise the Authority's options to purchase the above described land.

Further Resolved, That upon receipt of approval from the Head of the Maps and Surveys Division, the Director of the Land Acquisition Department is hereby authorized and directed to renew, as the date of expiration is reached, such

DEFENDANTS' EXHIBIT No. 155

options as are now held covering the lands lying within the brown line, so that further consideration may be given to these lands.

Further Resolved, That the options to purchase those lands enclosed within the green lines on the map (Exhibit 12-20-37b) shall be allowed to expire.

[fol. 4363] DEFENDANTS' EXHIBIT No. 156

Resolution of Board of Directors of TVA, Adopted December 20, 1937

Resolved, That the proposed letter by the General Manager to Mr. Clifton A. Woodrum, Chairman of the Subcommittee on Independent Offices Appropriations of the House Committee on Appropriations, with reference to development of plans for the Gilbertsville Dam is approved, and the General Manager is authorized and directed to transmit the said letter in the following form:

The Honorable Clifton A. Woodrum, Chairman, Subcommittee on Independent Offices Appropriations of the House Committee on Appropriations, Washington, D. C.

DEAR MR. WOODRUM:

The Board of Directors of the Tennessee Valley Authority today took action with reference to a more definite determination of plans for the Gilbertsville Dam which, while not materially affecting the budget estimates submitted to your subcommittee, is of such a character that we think the matter should be brought to your attention and the record made clear.

The committee was advised at the hearing on December 13, 1937, that the plans for the Gilbertsville Dam were still in a tentative stage and therefore precise final figures could not be given. However, the printed budget justification which had been submitted to the committee prior to the hearings did set out on page 10 detailed estimates on the Gilbertsville project. These figures were compiled from the best preliminary data available to budget officers of the Authority when the table on page 10 was prepared and

DEFENDANTS' EXHIBIT No. 156

printed in September. At that time, and for months prior thereto, the Authority's engineers, along with a group of consultants, had been making intensive investigations and studies of the projects and were arriving at conclusions differing in some respects from those upon which the budget officers' data were based, particularly in the matter of maximum pool level. While the Authority makes every effort to keep the Appropriations Committee informed of the latest data on its projects, it will be appreciated that plans are constantly evolving and that it is frequently impossible to revise all figures on a project to reflect the detailed changes which our engineers are continuously considering.

Very recently the Authority's engineers and the consulting engineers reached a final conclusion that the maximum pool level for the dam should be set at not less than elevation 375, and they have made recommendations [fol. 4364] accordingly. This figure was five feet higher than the tentative maximum pool level which had been used in prior computations. The reason for the increase was the judgment of the engineers that increased flood storage was highly desirable at the project and economically justified. The change in maximum pool level means that there will be approximately 4,600,000 acre feet of controlled flood storage at Gilbertsville instead of 3,700,000 acre feet, the amount obtained with a maximum pool level at elevation 370, and shown in the table appearing in the budget justification on page 10.

As certain options which the Authority had previously secured for land in this reservoir will expire on December 31, 1937, and as the conclusions of the engineers have matured sufficiently to warrant definite action, the Board today approved their recommendations, authorized the fixing of the taking line as required by a maximum pool level at elevation not less than 375, and provided for the taking up of options accordingly. We attach a copy of the Board resolution.

In order to advise the committee of the latest information available on our projects, we suggest that the tables already submitted to you be revised in line with the latest action, even though there will be no change in the estimated total cost of the project, and no effect on the budget requests.

DEFENDANTS' EXHIBIT No. 156

The change in pool level will somewhat increase the actual cost of the project over a project with maximum pool level at 370. However, as the entire project has been in a tentative planning stage, it was necessary that the estimates of total cost already submitted be only preliminary, and that they should provide a margin for the contingency that in the process of evolution plans might be somewhat changed. Our engineers are satisfied that the overall cost of the project will be well within the figure of approximately \$100,000,000 testified to by Mr. Bock at the hearings, and we think the figure of \$95,000,000 given on the table, page 10, in our budget estimate can fairly stand as the present estimate for the project.

We should like to state that it is especially important that the record be clarified in view of the fact that the figures which we supplied to the committee in the budget justification have been secured and used by our opponents in the pending litigation in Chattanooga to show a discrepancy between our budget figures and the most recent conclusions of our engineers.

Very truly yours, John B. Blandford, Jr., General Manager.

[fol. 4365] DEFENDANTS' EXHIBIT No. 157

Resolution of Board of Directors of TVA, Adopted February 20, 1936

Resolved, That pending further determinations of policy by the Board, any authority heretofore granted to exercise or execute the option of January 4, 1934, to acquire the electrical properties of the Tennessee Electric Power Company in the Norris Dam area, is hereby revoked.

Further Resolved, That pending further action of the Board, no officer or representative of the Authority is authorized to bind the Authority with reference to the exercise of said option.

Further Resolved, That any offers or tenders heretofore made with respect to said property are hereby withdrawn and revoked.

[fol. 4366] DEFENDANTS' EXHIBIT No. 158

Resolution of Board of Directors of TVA, Adopted January 25, 1935

Whereas, the Authority, by a certain Agreement between it and the Alabama Power Company, dated August 9, 1934, was granted an option by said Alabama Power Company to purchase, for the sum of \$1,000,000, certain urban distribution systems in Northern Alabama, more fully described in said Agreement, by which said Agreement the term of said option was to expire on November 12, 1934, and

Whereas, Section 1 of said Agreement, dated August 9, 1934, provided further that the date of delivery of a notice of election by the Authority to exercise the said option granted thereunder should constitute "the purchase date" within the meaning of said contract, which said purchase date was fixed as August 10, 1934, by the delivery by the Authority, on said date, of a notice of election to exercise said option, and

Whereas, Section 3 of said Agreement, dated August 9, 1934, provided that in the event that releases from the liens of the Indentures of Mortgage of said Alabama Power Company, covering said distribution systems, should not be ready and available for delivery within sixty days from the aforesaid purchase date, or from the date of the approval by the Alabama Public Service Commission of said Company's petition for approval of the said sale and conveyance of said distribution systems (whichever was of later date), then the Authority should be under no further obligation to purchase said property, notwithstanding its prior election to purchase the same, and Whereas, more than sixty days have elapsed from said purchase date and from the date of the approval, given on November 24, 1934, by the Alabama Public Service Commission, of the said sale and conveyance to the Authority of said distribution systems by the Alabama Power Company, and

Whereas, heretofore the Authority has made a proper tender to the Alabama Power Company of the consideration called for by said Agreement of August 9, 1934, and has made a proper demand for the conveyance of said properties in accordance with the terms of said Agreement of August 9, 1934, and has at all times been ready, willing, and able to consummate said transaction, and

DEFENDANTS' EXHIBIT No. 158

Whereas, as of the date hereof, the Authority is ready, willing, and able to consummate said transaction by the purchase of said urban distribution systems, and said Alabama Power Company has refused and now refuses to make said conveyance and has failed and refused to obtain said releases, as required by Section 3 of said Agreement, and [fol. 4367] Whereas, said releases required by said Section 3 of said Agreement, dated August 9, 1934, as of the date hereof, are not ready and available for delivery;

Now, Therefore, in consideration of the premises it is:

Resolved, that by reason of the aforesaid failure and refusal of the Alabama Power Company to have ready and available for delivery said releases required by said Agreement, dated August 9, 1934, or to make said conveyance conformably to the provisions of said Agreement, the Authority hereby withdraws from said Agreement of August 9, 1934, and said contract be, and it is hereby, cancelled, annulled and rescinded, and

Resolved, that Charles R. Hoffman, Assistant Secretary of the Corporation, be, and he is hereby, authorized and directed, upon behalf of the Authority, to notify said Alabama Power Company of the determination of the Authority to withdraw from said Agreement of August 9, 1934, and of the cancellation, annulment and rescission, by the Authority, of said Agreement.

[fol. 4368]

APPENDIX "A"

Excerpts Read Into the Record by Defendants from Complainants' Exhibit No. 105, being "House Document 328, 71st Congress, 2nd Session," Entitled "Tennessee River and Tributaries, North Carolina, Tennessee, Alabama, and Kentucky"

Page 10

5. At the present time there are 69 terminals on the Tennessee River. The navigation equipment in service on the river consists of 61 towing vessels and 183 barges which are owned by 39 operators. The commerce for 1926 was 1,982,252 tons. The average haul was 12.6 miles, making a total

APPENDIX "A"

ton-mileage of 39,020,096. Of this total 48 per cent was forest products, 23 per cent iron and steel, 15 per cent sand and gravel, 7 per cent farm products, and 7 per cent miscellaneous freight. Due to the fact that the river has not been adequately improved for navigation the commerce is small compared with the potential traffic which might use a satisfactory waterway. An appreciable amount of traffic has developed between the mouth and Florence. Above Florence it is impracticable to use boats and tows of large capacity such as are necessary for the economic transportation of heavy freight, and navigation is suspended during the low-water season. The estimated cost of transporting the 1926 traffic by water is \$842,777 while the estimated cost of transporting the same by rail is \$2,720,481, giving a total annual saving of \$1,877,704. Traffic on the tributaries is of insignificant amount except for a considerable movement of sand and gravel on the lower 4 miles of the French Broad River.

Page 11

11. The district engineer considers that it will be possible to provide for 9-foot navigation on the main stream from its mouth to its source, 652 miles, by means of a series of navigation, power and flood control developments that are economically sound. • • •

Pages 12-13

13. Improvement of the main river solely by regulation of flow by means of reservoirs would not be satisfactory, because sufficient navigable depths can not be so secured. It is possible to provide a 9-foot waterway by means of low-lift dams, but such a waterway would be inferior to the high-dam developments and would not permit the economical development of power. • • •

[fol. 4369]

Pages 16-17

23. Flood Control.—The greater part of the flood damages caused to local communities and to railroads and highways occurs on the main stream and on the lower part of the tributaries which are overflowed by backwater from the main stream. It is estimated that the large flood of 1926 caused damages amounting to approximately \$2,650,000. In

APPENDIX "A"

a supplementary report the district engineer states that in his opinion it is quite possible that floods larger than any previously recorded may some day occur. He estimates that a flood of the magnitude which might be expected on the average once in 500 years would do damage amounting to \$14,350,000 and that the average annual damage from floods may be taken as \$1,780,000 if due weight is given to the probability of future floods greater than those previously recorded. On the tributaries large floods may occur at any time while on the main stream all major floods of record have occurred during the period of December to April.

Page 17

25. The amount of flood control that can be secured by this project has been determined by a detailed study of the flow that occurred during the December, 1926, flood. The results shown in the following table are obtained by using storage as explained in each case.

Case I. Effect of Cove Creek storage with existing conditions on the main stream and other tributaries.

Case II. Effect of proposed Tennessee River projects operated without surcharge with existing conditions on the tributaries.

Case III. Effect of Tennessee River projects operated with 10-foot surcharge in combination with Cove Creek storage.

Condition	Gage height of 1926 flood in feet	
	Knoxville	Chattanooga
Actual	14.8	38.4
Case I	14.8	32.7
Case II	14.8	39.2
Case III	14.8	26.3

Pages 19-20

33. As required by law the report of the district engineer sets up a comprehensive plan for the ultimate utilization of the water resources of the Tennessee River for navigation in connection with power development and the con-

APPENDIX "A"

tol of floods. This ultimate plan includes the construction [fol. 4370] of about 200 dams and about 150 power houses, resulting in the canalization of about 1,900 miles of waterway and the production of about 3,000,000 kilowatts of continuous power. The estimated cost of the entire project is in excess of \$1,200,000,000. Such a project could be executed only by progressive steps and large portions can not be commenced until many years have elapsed. During this period the development of the art of engineering and changes in economic conditions will indicate the modifications which are necessary in the general layout of those portions of the plan and in the design of the structures. For this reason it would be unwise to adopt or even approve the entire plan at the present time. Considerable portions of the plan lie outside of the present limits of Federal jurisdiction. However, this thorough plan will be a valuable general guide for progressive development of the resources of the Tennessee Basin, and the large amount of engineering data contained in the report and its appendices should be made available for the use of interested parties. The board concurs in the recommendations of the district and division engineers that the report and its appendices be printed.

Page 21

* * * It is evident that the full utilization of the resources of this river for the public benefit requires its improvement by means of high dams built for the joint development of power and navigation.

Page 64

* * * The series of low dams for navigation only provide no flood control.

Pages 496-7

5. The studies indicate that of the total of 27,584,000 tons moving to, from, and across the basin in 1926, approximately 9,559,000 tons could have been more economically transported by water than by rail, resulting in an annual saving of approximately \$12,231,000, if the main stream were developed from Paducah to Knoxville. The foregoing figures are based on 1926 traffic. Due to increase in traffic in the United States and in the Southeast, the foregoing

APPENDIX "A"

figures would be doubled by the time the waterway is completed (assumed to be 1940). If the main stream were developed only to Chattanooga instead of to Knoxville, only 3,982,000 tons of the 9,558,000 indicated by the studies would be economical and the savings resulting therefrom would be only \$5,111,000 of the \$12,231,000.

6. While the studies indicate that approximately 9,000,000 tons may be moved economically by water with an annual saving of \$12,000,000, it does not seem reasonable to assume [fol. 4371] that all of this freight would take advantage of the waterway. From a knowledge of the manner in which the estimates were made and a study of the various items concerned, it is estimated that 60 per cent of the total is a conservative estimate of that which would use the waterway. According to this estimate, the amount of 1926 rail traffic which would have utilized the waterway had it been constructed is approximately 5,700,000 tons and an annual saving in transportation of approximately \$7,300,000. This, added to the transportation at present utilizing the waterway, amounts to 7,682,000 tons per annum and an annual saving of \$9,800,000.

7. The rate of increase in traffic in the United States and the southeastern territory for the 10 years preceding 1926 was approximately 231 per cent of that of 1926. Considering this rate of increase in commerce, it is estimated that by 1950 the commerce which would utilize the waterway if constructed from Paducah to Knoxville is approximately 17,800,000 tons with an annual saving of approximately \$22,800,000. For a development of the waterway from Paducah to Chattanooga only the corresponding estimates for commerce which would use the waterway by 1950 are 7,400,000 tons with a saving in transportation of \$9,600,000 per annum. The foregoing does not take into consideration the increase in commerce due to industrial development in the basin which is bound to take place when the water power indicated by the survey is developed. It is, however, ample to justify the construction of the combined navigation, water power, flood-control project, or for the project for navigation only in case the water-power project be not promptly developed.

Excerpts Read Into the Record by Defendants from Complainants' Exhibit No. 107, Being Part 1 of the "Annual Report of the Chief of Engineers of the U. S. Army, 1936"

P. 1035

Under the provisions of the Tennessee Valley Authority Act of 1933, as amended by an act approved August 31, 1935, the Tennessee Valley Authority is given power to construct such dams in the Tennessee River as will provide a 9-foot channel and maintain a water supply for same, from Knoxville to its mouth. This agency has under construction at the present time four high navigation power dams as follows: Pickwick Landing (mile 206.7), General Joe Wheeler (mile 274.9), Gunter'sville (mile 349.0), and Chickamauga (mile 471.0).

Excerpts Read Into the Record by Defendants from Complainants' Exhibit No. 108, Being "Hearing before the Subcommittee of House Committee on Appropriations, 73rd Congress, 1st Session."

P. 23-25

Dr. Morgan: . . . That dam will have one immediate result and another long-time result. Do you want me to go into it fully?

The Chairman: Yes; you may proceed.

Dr. Morgan: At the present time, the Muscle Shoals power is not sold, and we will have to build a market for it. Flood control down the Tennessee River is another item, and, also, navigation. My idea in respect to building this dam is to build it at once, and use it primarily for flood control. Then, when the market for power expands, we would begin to use it for that purpose as well as for flood control. Then, by and by, we would build another dam, say, half for flood control and half for power. Now, the power largely affects flood control all the way down the Tennessee River.

The Chairman: That is by reason of creating reservoirs to hold the water?

APPENDIX "C"

Dr. Morgan: Yes. Then as a flood-control measure it will begin to return its value immediately.

The Chairman: How many acre-feet of reservoir does this dam create?

Dr. Morgan: I cannot tell you, because the surveys are not completed. I would rather not put in the record a guess that would be bad. It is a very large reservoir. I can tell you, for instance, that at Chattanooga the dam will lower high water 9-1/2 feet. That is at a point 150 miles below the dam. Further on down it would lower the water very substantially, all the way down to the Ohio River.

The Chairman: Have you any data available by which you could tell us about how many acre-feet storage there would be?

Dr. Morgan: Yes, sir.

The Chairman: When you get your testimony, you may supply that information for the record.

Dr. Morgan: I will do so.

NOTE.—The estimated storage capacity above the dam is about 3,000,000 acre-feet.

Mr. Bolton: Will your plan conform to the general plans developed by the Chief of Engineers covering flood control, [fol. 4374] navigation, etc., in the Tennessee River?

Dr. Morgan: Yes, sir.

Mr. Bolton: Covering navigation and flood control.

Dr. Morgan: Yes, sir; all together.

Mr. Bolton: Do these plans conform to the studies that were made by the engineers 3 or 4 years ago?

Dr. Morgan: That study was a preliminary study, and the engineers have been modifying it. Therefore there must be some modification of it.

Mr. Bolton: I am referring to the studies and plans that cost the Government about \$1,000,000 to make. That was done by the engineers 2 or 3 years ago.

Dr. Morgan: That was a study that covered a very large area, and when we come to actually apply it in detail, we find that it must have some modifications. Some of those plans already have been modified by the Army engineers in construction work already begun under their direction, such large scale plans must necessarily be tentative.

Mr. Bolton: That study covered the Tennessee Valley.

Dr. Morgan: It covered navigation and flood control.

APPENDIX "C"

Mr. Bolton: And power, also.

Dr. Morgan: Yes, sir.

Mr. Oliver: You contemplate building a dam at Cove Creek that will serve not only navigation and flood control purposes, but will increase the power at Muscle Shoals and at all intermediate dams between Cove Creek and Muscle Shoals, do you not?

Dr. Morgan: Yes, sir.

Mr. Oliver: And at other dams that may be built hereafter?

Dr. Morgan: Yes, sir. The justification for building it right now is the value we derive from it for flood control. Then, by and by, as the power demand creeps up, we may build another dam. That will afford us a better degree of flood control.

P. 26

Mr. Bolton: I want to make sure that your plans for this development are in general conformity with the plans and studies developed by the engineers for flood control, navigation, and so forth, in the Tennessee River.

Dr. Morgan: They conform to the general policy, but the details are changing.

[fol. 4375] Mr. Bolton: I mean the plans developed by the engineers for the Tennessee River, providing 9-foot navigation, so as to conform to the general governing inland waterway development all over the country.

Dr. Morgan: Yes, sir.

[fol. 4376]

APPENDIX "D"

Excerpts Read Into the Record by Defendants from Complainants' Exhibit No. 109, Being "Extract from Hearings before the Subcommittee of House Committee on Appropriations, 73rd Congress, 2nd Session."

P. 162

Dr. Morgan: You are speaking of the Tennessee Valley Authority as being primarily a power development. That is not true. You are assuming that the Tennessee Valley Authority is a power development project.

APPENDIX "D"

The Chairman: Not altogether; no. Your dams are primarily necessary for flood prevention. That is another object of it.

Pp. 179-80

Mr. Bacon: Could you give us, for the record, not now, necessarily, what you consider will be the future development of navigation on this river?

Dr. Morgan: I can only give you an estimate; it will only be an estimate.

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Mr. Bacon: You anticipate some real navigation on this river?

Dr. Morgan: Yes.

Mr. Bacon: And can you give some kind of an estimate of what you think it will be?

Dr. Morgan: As well as anybody can.

Mr. Bacon: I wish you would put in the record.

Dr. Morgan: All right.

[The table referred to is as follows:]

The Army engineers propose to provide for 9-foot navigation on the main stream from the Ohio River to Knoxville and to ultimately provide 9- and 6-foot navigation on the principal tributaries. Estimates of possible tonnage with such system of waterways are given in table E, plate 66 of House Document No. 328.

The following table is condensed from plate 66, and gives the estimated possible tonnage for 1950 for the main river and the principal tributaries:

River	Possible tonnage (1950)
Tennessee	13,098,900
Clinch	2,680,000
Owens	2,420,500
Holston	4,018,500
South Fork Holston	28,200
Watauga	28,200
North Fork Holston	235,000
French Broad	470,000

APPENDIX "D"

River	Possible tonnage (1950)
Nolichucky	188,000
Hiwassee	1,175,000
[fol. 4377] Little River	37,600
Little Tennessee	188,000
Sequatchie	235,000
Elk	37,600
Bear Creek—Macky's Creek	3,525,000
Duck	940,000
Total, main river and tributaries	29,304,500

Information on the present status of navigation is given on page 31 of House Document 328. Appendix C, part I, page 205, House Document 328, is a detailed discussion of navigation and contains tables on commercial statistics of water-borne commerce for Tennessee and several tributaries for the years 1920 to 1927. These tables show that the tonnage for the year 1927 on the various rivers was as follows:

River	Tonnage
Tennessee	2,291,519
Clinch	7,380
French Broad	121,373
Hiwassee	860
Holston	945
Little Tennessee	375
Duck	2,150
Buffalo	51,718

The figures given for the tributaries in table E are very optimistic.

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Mr. Bacon: Also, on flood control, could you put in the record the information on floods on the Tennessee River in the past?

Dr. Morgan: Yes.

Mr. Bacon: Those facts must be available. . . . Those will be generally greater than the estimate made by the Army.

APPENDIX "D"

P. 181

The estimated damages for the Army's 500-year flood are also given, but in this figure the Authority does not concur for the reasons previously stated in this memorandum.

P. 184

Mr. Taber: How much do you estimate will be the cost of the Norris Dam?

Dr. Morgan: Thirty-four millions.

Mr. Taber: And in that there is nothing in the nature of navigation?

Dr. Morgan: Except that that will raise the water level on the lower river as much as possibly a 20 million dollar expenditure on the lower river itself.

Mr. Bolton: Do you know how much tonnage is expected on the river?

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[fol. 4378]

P. 184

Mr. Taber: The Hiwassee Dam is next; how much do you estimate on that?

Dr. Morgan: Our estimate is 13 millions. There is a question as to the site. We have not established which site we will use.

Mr. Taber: There is nothing in the nature of navigation there.

Dr. Morgan: Except there is hardly anything you can do for navigation better than to even up the flow above; by letting out stored water and at low water.

P. 185

Mr. Taber: How high is Pickwick Landing Dam?

Dr. Morgan: It is about 50 feet.

P. 186

Mr. Taber: Is this a storage proposition?

Dr. Morgan: That is a run of the river plant; in that, more than in any other, navigation is the important item. The rapids below Muscle Shoals will be flooded by that dam and made navigable.

[fol. 4379]

APPENDIX "E".

Excerpts Read Into the Record by Defendants from Complainants' Exhibit No. 112, Being "Extract from Hearings before the Subcommittee on Appropriations, United States Senate, 73rd Congress, 2nd Session".

P. 272

Dr. Morgan: The people of the community establish the cooperatives and we contract with that cooperative. The cooperative is a local organization, organized in that community, and we are making a contract with that cooperative that under these conditions we will furnish power, just as we are making contracts with municipalities that we will furnish the power.

[fol. 4380]

APPENDIX "F"

Excerpts Read Into the Record by Defendants from Complainants' Exhibit No. 114, being "Hearing before the Subcommittee of the House Committee on Appropriations, 74th Congress, 1st Session".

Pp. 468-9

Dr. Arthur E. Morgan: The selling of those bonds would imply that this entire program is a self-liquidating program. Part of it is; part of it is not. Part of it is a flood-control program. For instance, in the building of the Norris Dam, if we were building it for navigation and power alone, it would be built to a certain height. By adding about one-third to the cost of that, we added great elements of flood control, and such flood control is definitely an additional cost. It meant a that much bigger dam, that much more flowage to purchase, and so forth.

This is only incidentally a power development. It is primarily a navigation development and a flood-control development. Neither navigation nor flood control is self-liquidating in the usual sense.

Damages as Result of Tennessee River Floods

Mr. Thurston: What is there along that river to flood, Dr. Morgan?

APPENDIX "F"

Dr. Arthur E. Morgan: Our work has a very definite effect on the Mississippi River and the Ohio below. The damages will run about \$2,000,000 a year on the Tennessee itself, from floods.

Mr. Thurston: Damages to what?

Dr. Arthur E. Morgan: To property. The biggest damage is in the city of Chattanooga, where the damages will run something between a half million dollars and a million dollars each year on the average.

Mr. Thurston: Each year they come down and erect buildings in this area that they know the high water will damage the following year?

Dr. Arthur E. Morgan: No; a substantial part of the city is subject to floods.

Mr. Thurston: But you say that the damage is about a million dollars each year.

Dr. Arthur E. Morgan: That does not mean that they have put up new buildings. Take the railway terminals, for instance. They cannot put those where they please. They have to put them where the lay of the land requires, with factory buildings, and so forth. About the only places to build for many of those facilities are places that are subject to flood. That is the case in many other cities. In Cincinnati, for instance, if they should eliminate all building below the flood level they would have a serious situation.

Mr. Thurston: But they do constantly come down and put buildings on this area that are washed away by floods?

Dr. Arthur E. Morgan: No; not washed away. It is very much damaged. I should say that is even more true of railroad facilities, they do not rebuild the tracks every year, but there is damage done, and they come back and rehabilitate the damage.

[fol. 4381] Mr. Thurston: So they have damage of about a million dollars each year in the city of Chattanooga?

Dr. Arthur E. Morgan: There is a listing of those damages in the Army Engineers' Report 309, published, I think, in 1929.

Mr. Thurston: One would think that some of these people that have these losses each year would move up to higher ground so they would not be subject to that damage each year.

APPENDIX "F"

Dr. Arthur E. Morgan: It is not always feasible. There are a good many cities in which that is true. Take the railroads, for instance. Railroad lines follow the topography of the country. A railroad cannot climb up over hills or very steep grades. You find a good many towns in America where the change is not feasible, that is, to get out of the reach of floods entirely.

Mr. Bacon: So that to prevent floods in Chattanooga you would need dams above Chattanooga. That is where the Norris Dam comes in; is that correct?

Dr. Arthur E. Morgan: That is correct.

(Here follow three photolithographs, side folios 4382-4384)

APPENDIX "F"

Pp. 474-5

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SECOND DEFICIENCY APPROPRIATION BILL, 1935

General summary analysis of estimates

Programs and projects	Actual fiscal year 1934	Apportionment fiscal year 1935	Estimate, fiscal year 1936	Remarks
I. Navigation and flood control program:	96,713,788	\$18,847,040	\$10,641,436	Total estimated cost \$28,222,246
A. Norris Dam and Reservoir	2,181,231	15,972,449	8,650,002	Total estimated cost \$28,843,782
B. Wheeler Dam and Reservoir		2,860,543	10,611,000	Total estimated cost \$28,364,499
C. Pickwick Landing Dam and Reservoir		2,360,666	6,600,000	
D. Tribolary dam projects		68,840	2,390,000	
E. Main river dam projects	95,320	209,655	2,390,000	
F. General investigations of water resources				
Total, water control program	8,660,369	26,330,223	40,044,530	
II. Electricity program:				
A. Electricity operations (wholesale)	1,648,657	1,134,023	1,712,000	
B. Emergency retail operations	1,277	1,277,846	1,300,000	
C. Electric plant and equipment	1,874,319	6,508,774	5,505,000	
Total, electricity program	1,222,862	6,464,822	4,773,000	
III. National defense program:				
A. Murcia Shools general properties	812,598	928,225	255,000	
B. Fertilizer projects	560,512	2,044,455	2,225,000	
Total, national defense program	1,074,100	2,982,780	2,575,000	
IV. Related regional development program:				
A. Agriculture, watershed protection	24,246	602,701	2,862,000	
B. Industrial research and surveys	48,201	558,245	875,000	
C. Forestry, watershed protection	103,644	267,058	625,000	
D. Land planning	28,922	231,942	280,000	
E. Social and economic	182,116	431,158	600,000	
F. General mapping	170,067	869,220	410,000	
Total, regional development program	545,286	2,860,023	5,432,000	
V. Other undistributed expenditures:				
A. General equipment	415,425	261,862	100,000	
B. Administration and service expense (undistributed)	126,236	1,125		
Total, other undistributed expenditures	543,761	260,357	100,000	
Grand total, all programs	12,466,348	51,909,314	52,920,530	

1 Revenue, credit.

APPENDIX "F"

SECOND DEFICIENCY APPROPRIATION BILL, 1935

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Revision of general summary as of 1935

This tabulation is a revision of the general summary analysis of Budget estimates of the Tennessee Valley Authority for 1935, presented to the House Appropriations Committee at hearings on May 20, 1935. The changes, with the exception of the footnotes (1), are made pursuant to a request from the committee. Some items are decreased and others increased from the amounts recommended by the Authority at the hearings.

Programs and projects	Actual, fiscal year 1934	Adjustment, fiscal year 1935	Estimate, fiscal year 1935	Remarks
I. Navigation and flood-control program:				
A. Norris Dam and Reservoir	\$6,713,708	\$18,647,048	\$10,881,088	Total estimated cost \$26,222,246.
B. Wheeler Dam and Reservoir	2,181,221	15,972,448	4,800,000	Total estimated cost \$26,643,702.
C. Pickwick Landing Dam and Reservoir		2,889,233	10,614,000	Total estimated cost \$26,264,499.
D. Tributary dam projects (Hiwassee Dam)		260,000	4,200,000	Reduced \$200,000 from T. V. A. proposed budget. Total estimated cost \$12,000,000.
E. Main river dam projects (Guntersville and Chickamauga Dams)		60,840	4,000,000	Increased \$1,768,000 from T. V. A. proposed budget, in order to provide funds for beginning second down-river dam (Chickamauga) if construction is found technically feasible.
F. General investigations of water resources	94,230	209,645	200,000	
Total, navigation and flood-control program	8,998,209	38,330,233	41,495,089	
II. Electricity program:				
A. Electricity operations (wholesale)	\$448,687	\$126,028	\$715,000	
B. Temporary plant operations	13,770	\$7,849	130,000	
C. Electric plant and equipment	1,874,319	5,546,794	5,046,000	
Total, electricity program	1,327,666	5,494,543	4,311,000	
III. National defense and fertilizer programs:				
A. Munitions plants and general properties	\$15,869	928,235	200,000	
B. Fertilizer projects—nitrate plant no. 2	560,000	2,084,458	3,500,000	
C. Fertilizer demonstrations—Valley States		296,467	782,000	
Total national defense program	1,074,100	4,290,187	4,526,000	

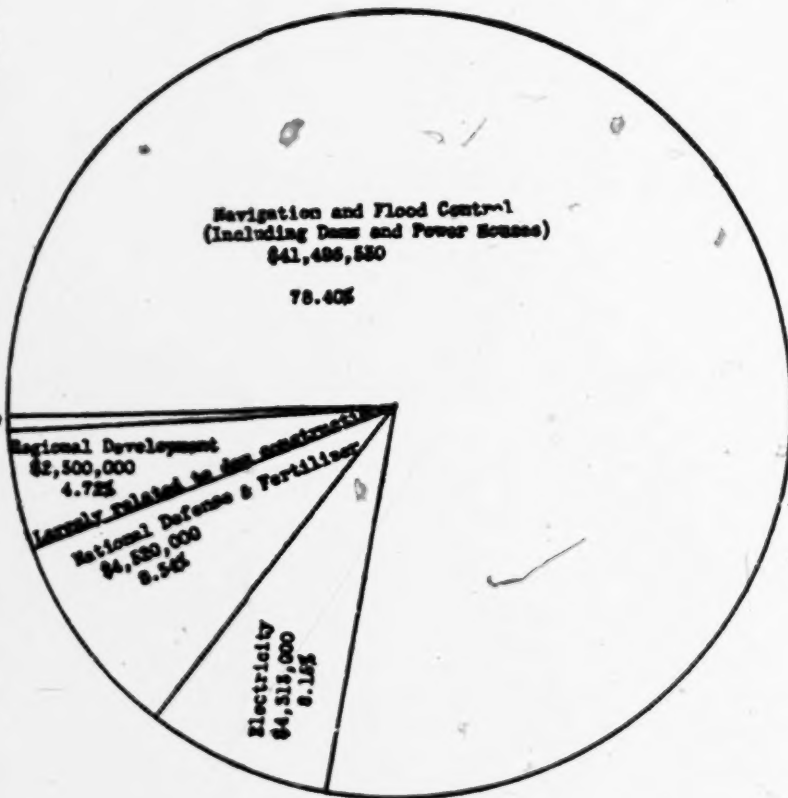
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See footnotes at end of table.

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SECOND DEFICIENCY APPROPRIATION BILL, 1935.

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*Undistributed Expenditures - \$100,000 - .19%.

APPENDIX "F"

[fol. 4385]

Pp. 480-1

The Chairman: Now, reverting back to your summary statement, we have the item of general investigations of water resources. You spent \$95,320 in 1934; you spent \$299,655 in 1935; and you expect to spend \$280,000 in 1936?

Dr. Arthur E. Morgan: Yes, sir.

Borings for the Aurora Dam

The Chairman: Just what is that project?

Dr. Arthur E. Morgan: That is working out the engineering problems in connection with dam construction. One of the large items there, which we have not isolated because it is so difficult to tell in advance, is the borings for the Aurora Dam or for some other dam near the mouth of the Tennessee River. We are exploring the possibilities.

The Chairman: The possibilities of what?

Dr. Arthur E. Morgan: Of foundation.

The Chairman: Then this exploration is for the purpose of finding a dam site, with suitable foundation, suitable banks, and so forth, to construct a dam at or near Aurora Landing; is that it?

Dr. Arthur E. Morgan: That is part of it. Another part is the silt investigations. We are carrying on investigations of the rate at which these reservoirs will silt up, and how to handle that. Then there is stream flow.

Stream Flow Investigations

The Chairman: You ought to have had that for years now.

Dr. Arthur E. Morgan: The trouble is that the records are inadequate. We could work with very much greater surety if they had actually been better developed.

[fol. 4386] The Chairman: The Geological Survey has been taking stream flow, has it not?

Dr. Arthur E. Morgan: But very inadequately. The records there are very inadequate for planning purposes. We have put in 114 gaging stations on the various tributaries, so that we can get those records.

The Chairman: It will take several years to get accurate records, will it not?

APPENDIX "F"

Dr. Arthur E. Morgan: Every year adds to what we have, especially as to low flows.

The Chairman: Stream flow depends on the rainfall, and the rainfall may be several inches deeper in one year than in another.

Dr. Arthur E. Morgan: Yes; and our rainfall records are inadequate. In the operation of these dams we must know how much to hold back in our various reservoir dams, and when to let it out, and when we need to hold it. The effective operation of those dams depends upon a knowledge of rainfall and run-off which will take years to develop fully.

The Chairman: Well, are we going to maintain a complete set of rainfall gages and river gages for the operation of this Tennessee River system, and not depend on the Weather Bureau at all?

Dr. Arthur E. Morgan: We are not doing that. We are cooperating with both the Weather Bureau and the Geological Survey. They are keeping up their own records, and where we need additional ones to get effective knowledge, we are adding them; but the records are turned over to them and are published by them. We are not setting up any additional facilities except where it is necessary to fill in the records, and there we are turning them over to the Geological Survey and the Weather Bureau for their use. We are working in very close cooperation with them.

Pp. 482-3

The Chairman: This is what is in my mind. You have started three dams, have you not?

Dr. Arthur E. Morgan: Yes.

The Chairman: That is all, is it?

Dr. Arthur E. Morgan: Yes.

The Chairman: The Norris Dam, the Wheeler Dam, and the Pickwick Landing Dam; that is all you have stated?

Dr. Arthur E. Morgan: Yes.

The Chairman: Have you any reason to believe that regulation by those three dams will not prevent overflows?

Dr. Arthur E. Morgan: Yes.

The Chairman: You do not think they will?

Dr. Arthur E. Morgan: They will not completely, no. They will go a long way toward preventing overflow.

APPENDIX "F"

The Chairman: You think they will prevent all except very high overflows?

Dr. Arthur E. Morgan: No; they will do about between a half and a third of the job on the Tennessee River. They will add substantially to the value of flood control on the Ohio and the Mississippi River also. But they will not completely prevent floods on the Tennessee. That is on'y one of their purposes.

[fol. 4387]

P. 485

Mr. Bacon: How many dams in all will be necessary to complete the 9-foot channel, in which I presume will go to Knoxville?

Dr. Arthur E. Morgan: To Knoxville.

Mr. Bacon: How many additional dams will be necessary for a 9-foot channel?

Dr. Arthur E. Morgan: Three to a point just above Chattanooga.

Mr. Bacon: Three in addition to the four now built or building?

Dr. Arthur E. Morgan. Yes.

P. 495

Dr. Arthur E. Morgan: Yes; it is this: That the Congress established the policy of creating a 9-foot channel in the Tennessee River to Knoxville by means of low navigation dams. It was acknowledged on all sides that high dams were better than low dams and the specific statement is made that if a private organization, or a State or a municipality—if any other agency shall build high dams—then the cost of building low dams shall be contributed to them by the United States.

Mr. Bacon: As a practical matter, no municipality or private concern is going to build on the Tennessee River, because you would not let them.

Dr. Arthur E. Morgan: This law was passed before the Tennessee Valley Authority Act.

The Chairman: All of that is conditioned upon the high dam being constructed so that it would aid navigation?

APPENDIX "F"

Dr. Arthur E. Morgan: Yes. As the Army Engineers testified in this other hearing, and as is generally recognized, high dams are very much more economical. But for navigation—for instance, as an illustration, the Wilson Dam takes the place of about seven low dams. The two combined locks, the tandem lock at Wilson Dam, is very much cheaper to operate than it would be to operate seven low dams with a few miles between each one.

The low dams leave a navigation channel which is very narrow, where it is canalized. The high dam leaves a full width of the river in which to travel.

There is no comparison whatever as to the relative values of the two dams.

The Chairman: The high dam backs up water which it can release for purposes of navigation into the lower parts of the river below.

Dr. Arthur E. Morgan: Yes.

The Chairman: That is very plain.

Pp. 518-19

The Chairman: You have an item of \$40,000 for "transportation investigations (economics)". You state that these are studies of transportation problems. Does not that look far-fetched in connection with this valley?

Dr. Arthur E. Morgan: No, sir; not in that valley. That region is in a fairly impossible condition from the transportation standpoint.

We are developing a navigation system on the Tennessee River, and one of our primary considerations is where are the terminals going to be.

The Chairman: Where the towns are located, at suitable points.

[fol. 4388] Dr. Arthur E. Morgan: That may not follow. The set-up of transportation for that region for the future, as far as we can see, will be this: There will be river terminals where they will gather up all these materials from the region around for 50 or 75 miles, and they will be brought in by truck or boat. The highway system has not been developed.

Mr. Thurston: Do they not have State highways systems?

Dr. Arthur E. Morgan: We are working with them. We are cooperating with them.

APPENDIX "F"

Mr. Thurston: Is it not primarily the duty of the State of Tennessee to provide roads within the State?

Dr. Arthur E. Morgan: We are not providing roads. Through Alabama and Tennessee, we are working in co-operation with the States themselves. We are trying to coordinate the railroad facilities with the highway facilities and navigation facilities, so as to work out an economic program. That is all we are trying to do.

Pp. 523-4

The Chairman: You refer to four dams—the Wilson Dam, the Norris Dam, the Wheeler Dam, and the Pickwick Dam. Do you believe that these dams will produce all the power you will need to meet the demand for power?

Dr. Arthur E. Morgan: Our studies indicate that by the time the dams are built there will be a shortage of power of more than what they can produce. The studies of the Federal Power Commission and our own studies are together on that.

The Chairman: Then you think the Hiwassee project is of next importance. You think it is important to complete the project from every standpoint; flood control, production of power, and navigation?

Dr. Arthur E. Morgan: As I say, this estimate does not include power installation. We would not install the power facilities until we find that we need it.

The Chairman: I understand that. But you think it is necessary for the other two elements?

Dr. Arthur E. Morgan: Yes.

P. 535

Mr. Lilienthal: . . . About 98 per cent of the rural area in that section, which is a prosperous section in the valley, does not have any electric service at the moment; and in addition to that a group of some seven or eight municipalities in west Tennessee, in this same group of counties, has petitioned for a source of power. They are now supplying their own needs through expensive steam stations, many of them obsolete, and fuel stations.

The Chairman: How much is that line estimated to cost?

Mr. Lilienthal: That totals \$1,650,000. That will provide an outlet and an additional source of revenue for power.

APPENDIX "F"

The survey of that project is still incomplete, but it appears to be a very likely and appropriate thing to do from a business point of view, without in any way taking away existing business of any private company.

The Chairman: That is \$2,700,000 and \$3,495,000.

[fol. 4389]

P. 538

Mr. Lilienthal: This is new construction, in 8 counties in Mississippi, 6 counties in Alabama, and 5 counties in Tennessee.

The Chairman: You mean the new construction of lines?

Mr. Lilienthal: The construction of farm lines to farms not now served; yes, sir.

P. 540

Mr. Thurston: Section 23 (3), it seems to me, is very interesting.

The maximum generation of electric power consistent with flood control and navigation.

Where do you get additional authority to make power that you expect to sell generally? Under what section is that?

Dr. Arthur E. Morgan: The maximum control of electric power consistent with flood control and navigation is this: Whenever you build a dam, you inevitably develop hydraulic power. You lift that water up so that it has got to fall. Now, if we could get into a position where the further navigation and flood control could be carried by this method, and if the Government has no burden of carrying navigation and flood control currently, year to year, all that is good.

Now, when we are building a dam, we essentially create hydraulic power. The question then is, shall we waste that or shall we develop whatever is consistent with navigation and flood control?

Mr. Thurston: It seems to me, though, that you are going to generate so much more power than you can use in your own enterprises that, of course, you will have an excess to sell or go to waste.

Dr. Arthur E. Morgan: We are only changing its nature from hydraulic power to electric power. That power is

APPENDIX "F"

developed when we build the dam. Now, whether we use that power or waste it is another matter. It is just a question of whether we use it or waste it. If we build these dams, that power is going to be there. Are we going to use it or waste it? That is the only question.

The Chairman: In other words, the development of hydro-electric power, under this act, extends only to flood prevention and navigation?

Dr. Arthur E. Morgan: Yes, sir; and you cannot build these dams without developing hydraulic power. The dam makes that head of water. Now the question is, are we going to waste it or are we going to use it?

Pp. 616-17

Dr. Arthur E. Morgan: I should say, as to the Norris Dam, that the power is only one item there. It happens that power and navigation pretty well coincide. When the rivers are low, you need it for navigation, and you are liable to need it for power at the same time; but the navigation has the right-of-way.

[fol. 4390]

Navigation

Mr. Taber: I do not suppose there is any substantial navigation there at the present time.

Dr. Arthur E. Morgan: We are having quite a bit of navigation. The materials for building our dams are hauled on the river. There is pretty heavy navigation now.

Mr. Taber: But that is about all there is of it?

Dr. Arthur E. Morgan: That is the greater part.

Mr. Taber: Is it open for navigation?

Dr. Arthur E. Morgan: No, sir; only in sections. We cannot have navigation until we get a channel to navigate in. Our channel is down to a foot and a half deep in some stretches, and until that channel is completed we have no conditions for through navigation.

Mr. Taber: Then how are you able to use it for your own purposes?

Dr. Arthur E. Morgan: We cannot go beyond our own.

Mr. Taber: You mean you cannot go beyond your own Wheeler Dam?

Dr. Arthur E. Morgan: Yes, sir. That is at the head of the pool of Wilson Dam, you see. We have got fine gravel

APPENDIX "F"

deposits just above us that we would like to use in the Wheeler Dam, but the channel is so shallow that we cannot use it; and we are getting the gravel 50 miles away down the river, because we cannot get up the river to get it.

Mr. Taber: And does the Wheeler Dam throw the water back to maintain navigation all the way to Norris or not?

Dr. Arthur E. Morgan: Oh, no. It throws it back about 80 miles up to Guntersville. With the Hales Bar Dam, which now exists, and the Guntersville Dam, in between, the water will be backed up to Chattanooga.

Mr. Bacon: And the Chickamauga Dam will carry it to Knoxville?

Dr. Arthur E. Morgan: No; there is no dam in between. The White Creek Dam and the Chickamauga and perhaps a dam at Coulters Shoals will take it to Knoxville.

Mr. Bacon: And the Aurora will bring it up to Pickwick?

Dr. Arthur E. Morgan: Yes, sir. The Norris Dam will raise the level down to Pickwick; so we will have about 7 feet already. The Aurora would make it 9 feet or more.

Mr. Bacon: The Aurora will not have to be a very high dam, then?

Dr. Arthur E. Morgan: It will be about 40 feet, I think; but it will be an expensive one, because the foundations are not the best.

Pp. 626-7.

Mr. Taber: In order to understand the actual situation with reference to flood damages incurred on the Tennessee River, it appears that this entire basin, according to the statement you gave us the other day, reflects an average annual flood damage, on account of all floods, running to \$291,000 a year. Is that approximately correct?

Dr. Arthur E. Morgan: The total estimated average annual damage from all floods is \$1,784,000.

[fol. 4391] Mr. Taber: Where do you find that?

Dr. Arthur E. Morgan: That is in the last column. What you were reading from is just the land. The first column is for cities, which is \$1,000,000 a year—cities and towns; the second is land, \$291,000; the next is railroads, \$332,000; the next is highways, \$157,000; and the total is \$1,784,000, as an average annual costs.

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Mr. Taber: With reference to Pickwick Dam, there is not to be any power installation; that is practically a navigation proposition for the present; is that correct?

Dr. Arthur E. Morgan: There is about a million acre-feet of flood control there. It is more substantial than any other dam for flood control, except Norris.

Mr. Taber: There is a very substantial flood-control value there.

Dr. Arthur E. Morgan: Yes.

Mr. Taber: Because you impound how much water?

Dr. Arthur E. Morgan: One million three hundred thousand acre-feet volume. We have under consideration raising that a few feet to add to its flood storage.

P. 631

Total Reservoir Storage of Water at Four Dams

The Chairman: I do not know whether you got this complete in the record or not, but I want to have you put it all in one place. I will read this statement to see if it is correct. As to the acre-feet of water that could be impounded under these dams when completed, the amount for the Wilson Dam is 500,000 feet; for the Wheeler Dam 1,250,000 feet; for the Norris Dam 3,650,000 feet; and for the Pickwick Dam 1,032,000.

Navigation to Knoxville, Tenn.

I want to make this clear. Up to what point does this project contemplate navigation?

Dr. Arthur E. Morgan: Up to Knoxville.

The Chairman: What dams are absolutely essential to be constructed to provide navigation to Knoxville?

Dr. Arthur E. Morgan: In addition to those we are now building?

The Chairman: What dams are essential?

Dr. Arthur E. Morgan: The Aurora Dam.

The Chairman: Is the Norris Dam in it?

Dr. Arthur E. Morgan: It furnishes water.

The Chairman: Is it essential? It is a mother dam, is it not?

Dr. Arthur E. Morgan: Yes, Norris Dam, Wilson Dam, Wheeler Dam, Pickwick Dam, Aurora Dam, Guntersville,

APPENDIX "F"

Chickamauga Dam, and White Creek Dam are essential and the Hiwassee Dam will be valuable, but not indispensable.

The Chairman: That will give a 9-foot channel, will it?

Dr. Arthur E. Morgan: Yes.

[fol. 4392]

Pp. 635-6

Mr. Bacon: Which do you think would be the most valuable, so far as you can picture it.

Dr. Arthur E. Morgan: Gunter'sville would be the most valuable, because that would bring navigation up to Chattanooga. It would make Chattanooga the head of navigation.

Mr. Bacon: And that navigation would be available in carrying out the work up to Chattanooga.

Dr. Arthur E. Morgan: Yes.

Mr. Bacon: Then you will have pretty good navigation from Chattanooga down to Pickwick, and how far below?

Dr. Arthur E. Morgan: We will have a 7-foot channel down to the Ohio River.

Mr. Bacon: Down to Paducah.

Dr. Arthur E. Morgan: Yes, sir.

Mr. Bacon: You would have a 7-foot channel down to Paducah, including a 9-foot channel from Pickwick to Chattanooga, if you build the Gunter'sville Dam.

Dr. Arthur E. Morgan: Yes, sir. A 9-foot channel from Chattanooga to Pickwick to 7 feet below. It may be 6½ feet.

Mr. Bacon: When the Chickamauga Dam, White Creek Dam, and Coulter Shoals Dam are built at a cost of \$45,000,000 you will have a 9-foot channel from Chattanooga to Knoxville, but you do not intend to go ahead with that until you have built this 9-foot channel from Chattanooga to Gunter'sville.

Dr. Arthur E. Morgan: You have stated the case, from the standpoint of navigation. The Gunter'sville Dam would bring navigation right to Chattanooga.

Mr. Bacon: You would not want to go above Chattanooga with a 9-foot channel until you brought it to Chattanooga.

Dr. Arthur E. Morgan: No; probably not for navigation purposes.

Mr. Bacon: Will there be power at Chickamauga?

APPENDIX "F"

Dr. Arthur E. Morgan: Yes; good power.

Mr. Bacon: Will you put the power installation in

Dr. Arthur E. Morgan: When it is needed.

Mr. Bacon: How about Guntersville.

Dr. Arthur E. Morgan: It is the same thing there.

Mr. Bacon: You will not install it right away, but you will fix it so it can be installed?

Dr. Arthur E. Morgan: Yes.

[fol. 4393]

APPENDIX "G"

Excerpts Read Into the Record by Defendants from Complainants' Exhibit No. 115, Being "Hearing before the Subcommittee of House Committee on Appropriations, 74th Congress, 2nd Session, Part I."

P. 115

We have an item of about a half million dollars to continue exploration at Gilbertsville.

The Chairman: Did you find a foundation there?

Dr. A. E. Morgan: Yes, we found a good foundation finally.

Mr. Taber: Did you get away from the cave situation at Aurora?

Dr. A. E. Morgan: Yes.

Mr. Taber: You found it was not a good site.

Dr. A. E. Morgan: It was not a good site, and we have gone down the river where we can provide much better flood control.

Mr. Taber: Have you made drillings, or are you not far enough along to tell us about that?

P. 124

The Chairman: As for navigation, figuring on the dams that you recommend, how many miles of river will be navigable?

Dr. A. E. Morgan: There will be just about 750 miles of 9-foot navigation—650 miles on the main river and something over 100 miles on the tributaries.

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P. 125

Dr. A. E. Morgan: Yes, sir; the output would be from that capacity; but I would like to go further than that and say that that means only a part of the total generating capacity that would be possible if the market grows. I would like further to say that in making a navigable channel, you must build the dams where dams are required for navigation. You cannot build them where they happen to be suited for power development. For instance, the location of the Chickamauga Dam site, that was appropriated for last year, is determined by the requirements for navigation. Nobody would ever build a dam there for power, but a dam is required at approximately that location to provide a navigable channel.

The Chairman: What dam is that?

Dr. A. E. Morgan: The Chickamauga Dam. You asked when there would be a return from power, and I was saying, that some of these dams would not be built if power were the main objective, but they are built in order to provide a navigable channel.

The Chairman: And to prevent floods.

Dr. A. E. Morgan: Yes, sir.

[fol. 4394]

Pp. 126-7

Dr. A. E. Morgan: The only way to get at this is this: The levees in the Mississippi Valley have been built up about as high as they can safely be built. It is estimated that if it were at all feasible to raise them higher, it would cost somewhere between \$35,000,000 and \$50,000,000 a foot to raise the levee system higher. When you undertake to do that, you get into great difficulties because of raising the flood levels in the backwater of the tributaries.

The Chairman: The levees back the river up.

Dr. A. E. Morgan: Yes, sir. If the flood level is raised on the main river, the water level will be backed up the tributaries a greater distance. This system of reservoirs proposed by the TVA would lower the flood water stage along the Mississippi levees possibly 3 feet.

The Chairman: On the stretches below.

Dr. A. E. Morgan: Yes, sir, below the mouth of the Ohio.

The Chairman: I am asking you—

APPENDIX "G"

Dr. A. E. Morgan (interposing): I am indicating the difficulty of calculating just what the flood benefit would be on the Mississippi, but a reasonable estimate would be somewhere about \$100,000,000.

The Chairman: What benefit does the country realize from navigation, and what from flood prevention, from the erection of these dams?

Dr. A. E. Morgan: I would say that possibly for flood control on the Mississippi, \$100,000,000 might well be charged. Possibly a third or a half of the cost of the system might properly be charged to flood control.

Mr. Bacon: And the other half to navigation?

Dr. A. E. Morgan: Yes, sir.

The Chairman: How much should be charged against navigation?

Dr. A. E. Morgan: Possibly half. For flood control we have a more definite calculation. I must add that these are very rough estimates or guesses. In discussing these matters you appreciate that I am largely speculating in generalities. We are now preparing the report on the allocations of value of all the properties to submit to Congress in detailed form as required by the act.

Mr. Bacon: Taking the investment of \$343,000,000, would you say that half would be chargeable to flood control and the other half to navigation?

Dr. A. E. Morgan: I think the other half could be charged properly to navigation.

The Chairman: In other words, you think that the benefit that the country receives from flood control and navigation justifies the entire expenditure?

Dr. A. E. Morgan: Yes, sir.

Pp. 127-9

Mr. Bacon: You say that half of the \$343,000,000 may be charged to navigation. What navigation will you get when the project is finished, or what depth will you give?

Dr. A. E. Morgan: A minimum of 9 feet draft. That would be a minimum 12-foot channel, because you want that much depth under the vessel. On the lower part of the river, the locks are 110 feet wide and 600 feet long, with a usable depth of 10 feet. This system will connect with the general

APPENDIX "G"

Mississippi system, with a total of something over 5,000 miles of similar channel.

Mr. Bacon: Do you think there is enough navigation on the river to warrant an expenditure of \$172,000,000?

[fol. 4395] Dr. A. E. Morgan: I believe there will be as time goes by. It will not happen all at once; it will take some time for navigation to develop. The War Department in 1926 estimated that by 1950 the actual savings on the freight hauled would be \$22,000,000 a year.

Mr. Bacon: By 1950.

Dr. A. E. Morgan: Yes, sir.

Mr. Thurston: Three per cent of \$171,000,000 would be approximately \$5,000,000. You would have to show a net profit on transportation of \$5,000,000 a year.

Dr. A. E. Morgan: The War Department estimated the saving by 1950 on the cost of freight would be \$22,000,000 a year.

Mr. Thurston: The charge-off for flood control, would be \$171,000,000, for the limited area that would be protected by flood control.

Dr. A. E. Morgan: Its chief value would be on the Mississippi. The Mississippi levees are now getting to the point where they cannot safely be built higher without substantially increasing the cross section. If they are built any higher, there will be increased danger of failure from excessive seepage through sand layers underneath.

Rivers Contributing Flood Waters to Mississippi River

Mr. Thurston: Has there been any estimate of the flood waters supplied by the various tributaries of the Mississippi?

Dr. A. E. Morgan: The contribution of flood waters is largely by the Ohio and the tributaries entering farther down the river. The whole Missouri River watershed, would not make as much difference as the Tennessee River. It is the lower tributaries that cause the greatest floods.

Mr. Bacon: What are those tributaries?

Dr. A. E. Morgan: There are four of them, the Arkansas, the Ohio, the Tennessee and the Red.

Mr. Thurston: Have they finished the project under the Public Works appropriation, on the lower Mississippi, or

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has that been discontinued because of the Tennessee Valley project?

Dr. A. E. Morgan: I do not know how to answer that question.

Mr. Thurston (interposing): That project is an independent scheme of the Army engineers, for the control of Mississippi flood waters.

Dr. A. E. Morgan: I do not know. I cannot answer that.

Mr. Bacon: If you improved the Ohio, or if you could control floods in the Ohio, that would be important in the control of floods in the Mississippi. The Ohio is more important in that respect than the Tennessee, is it not? You do not have as much flood in the Tennessee as in the Ohio, do you?

Dr. A. E. Morgan: Yes, sir; we have very destructive floods in the Tennessee.

Cooperation With Corps of Army Engineers

Mr. Thurston: I want to know if the Tennessee Valley Authority coordinates its work with that of the Corps of Army Engineers for flood prevention in the Mississippi River.

Dr. A. E. Morgan: Yes, sir; we are endeavoring to do so.

Mr. Thurston: Do you have a joint board to coordinate it?

Dr. A. E. Morgan: We do not have a formal joint board, but their representatives and our representatives meet together. Arrangements have been made for their liaison [fol. 4396] officer to meet out liaison officer. Two or three weeks ago we spent considerable time in their office at Louisville, we going over their data and they going over our data. We used their data and they use ours.

Mr. Thurston: The basic principles upon which your river work has been progressed were not drawn up or made up by War Department or the Army Corps of Engineers, were they?

Dr. A. E. Morgan: The War Department, or the Corps of Engineers, United States Army, recommended to Congress that the Tennessee River be improved for 9-foot navigation from Knoxville to the mouth. They indicated two ways of doing that—one by a series of low navigation dams, which

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were to be provided for navigation only, and the other a series of high navigation dams for navigation, flood control, and power.

The Chief of Engineers recommended to Congress that if the States, municipalities, or private agencies would build higher dams, the Federal Government should commit itself to share the cost to the extent of the cost of the low dams to be displaced. Under such a plan, 32 low dams would be displaced by 7 higher ones. The Congress, in the Rivers and Harbors Act of 1930, definitely committed the United States Government to contribute to the cost of the higher dams the saving that would be made by not building the lower dams.

Mr. Thurston: Your philosophy in relation to this project is that of the \$343,000,000, one-half of the charge should be allocated to flood control, and the other \$170,000,000 should be allocated to navigation.

Dr. A. E. Morgan: No, sir; you asked what expenditure would be justified by flood control and by navigation.

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The Chairman: You said awhile ago that these dams on the Tennessee River and its tributaries had a powerful effect on flood prevention in the Mississippi River.

Dr. A. E. Morgan: Yes, sir.

The Chairman: I wish you would state how many acre-feet of water all of the dams on this project, when completed, could hold back from the flood waters of the Mississippi River.

Dr. A. E. Morgan: It will take a minute or two to calculate it.

The Chairman: Suppose you insert that in the record.

Dr. A. E. Morgan: I will do that.

(Since the close of these hearings the data requested have been published in the Authority's report on the Unified Development of the Tennessee River System, at p. 19. See also the table inserted at p. 123 of these hearings.)

Mr. Taber: Along with that, incorporate a statement showing what the total flow is, so we can estimate what the proportions are.

The Chairman: There are three rivers emptying into the Mississippi that contribute largely to its flood waters—

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namely, the Arkansas, the Ohio, and the Tennessee. As I understand it, they are the main tributaries of the Mississippi that cause floods.

Dr. A. E. Morgan: Yes, sir. The Red River comes in below, and contributes to the floods to a less degree.

The Chairman: Which one of those rivers contributes the greatest flow of flood waters to the Mississippi?

Dr. A. E. Morgan: The Ohio River, which includes the Tennessee, causes the greatest flood damage in the aggregate.

The Chairman: Which contributes the most, the Ohio River or the Tennessee?

Dr. A. E. Morgan: I think it would be the Ohio where the two rivers come together. I think the Ohio would sometimes have a bigger flow than the Tennessee. Sometimes one contributes more, sometimes the other.

[fol. 4397] The Chairman: Which has the greater influence on Mississippi floods, the Ohio or the Arkansas?

Dr. A. E. Morgan: The Ohio comes in much farther up the river than the Arkansas, so there is a large part of the river that is not affected by the Arkansas that is affected by the Ohio.

The Chairman: Which is the larger river at Paducah, the Ohio or the Tennessee?

Dr. A. E. Morgan: The Ohio has a larger flow.

The Chairman: Which has the greater drainage area? Does the Ohio have the greater drainage area and greater rainfall?

Dr. A. E. Morgan: The Ohio has the larger drainage area, but the Tennessee area has the heavier rainfall.

Mr. Taylor: What is the distance between the mouth of the Ohio and its junction with the Tennessee?

Dr. A. E. Morgan: It is about 40 or 50 miles.

Mr. Taylor: That does not amount to much so far as flood works are concerned.

Mr. Cannon: The Missouri is longer than any other tributary of the Mississippi.

Dr. A. E. Morgan: Yes, sir; but it brings its waters in at a time of the year when the crest has passed the other areas, and it drains a great area of light rainfall. The effect of the Missouri on the Mississippi is less than that of the Ohio or Arkansas.

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Mr. Taber: How does the rainfall up here at Norris Dam compare with that down along the Mississippi Valley? Are the rainfalls heavier or lighter?

Dr. A. E. Morgan: The rainfall above the Norris Reservoir is heavier than that of the part of the Mississippi which lies to the north of the Tennessee, but lighter than the rainfall of the drainage area south of the Tennessee.

Mr. Taber: You get the most of it from the hills?

Dr. A. E. Morgan: Yes, sir.

Mr. Taber: You very seldom get any heavy rainfalls over in these mountains in the East, in Tennessee, and in the west end of North Carolina at the same time the rains are falling on the other side of the Mississippi, do you?

Dr. A. E. Morgan: You do not often, but once in a while you may.

Mr. Taber: It takes a considerable time for water to flow from such a place as Norris Dam, or such places as you have been operating on, down into the Mississippi, and then down into the levee territory, does it not?

Dr. A. E. Morgan: Yes, sir.

Mr. Taber: How long would it take ordinarily for a flood tide of water to flow from Norris Dam over into the levee territory on the Mississippi River?

Dr. A. E. Morgan: About 2 weeks from the highest reservoir.

Mr. Taylor: It is a rapid stream.

Dr. A. E. Morgan: Yes, sir; it is a rapid stream.

Mr. Taber: A flood tide from any of the other rivers would get into the levee territory in 4, 5, or 6 days, would it not?

Dr. A. E. Morgan: From the Missouri, it might be 6 weeks.

Mr. Taber: How rapidly a flowing river is the Arkansas?

Dr. A. E. Morgan: The waters of the Arkansas would come down at about the same time.

Mr. Taber: About the same time as the waters of the Tennessee.

Dr. A. E. Morgan: Yes, sir.

Mr. Taber: You mean it takes as long for the water to come down the Arkansas as down the Tennessee?

[fol. 4398] Dr. A. E. Morgan: The Arkansas River rises

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in Colorado, but the major part of the rainfall in its drainage basin comes within 500 miles of the mouth of the river.

Mr. Taber: Then, it does not take very long.

Dr. A. E. Morgan: I would say that from a large part about the same length of time would be required as from the area above Norris Dam.

Mr. Taber: How far is it from the Norris Dam into the levee territory of the Mississippi?

Dr. A. E. Morgan: About 700 miles.

Mr. Taber: If the levee territory does not begin at the mouth of the Ohio—

Dr. A. E. Morgan (interposing): Cairo has the highest levees on the Mississippi. If it had been confined within levees, the water would have risen to 58.5 feet at Cairo in the 1927 flood.

Mr. Taber: That is the big source of the floods in the Mississippi—that is, waters coming out of the Ohio.

Dr. A. E. Morgan: The Ohio is looked upon as controlling floods on the Mississippi, or as the biggest element.

Mr. Cannon: Has that height varied in the last 50 years appreciably?

Dr. A. E. Morgan: Yes, sir; it is higher than it used to be. The levees have been raised, and the water cannot get away. For instance, in the twenties, the reports of the Chief of Engineers each year said that the Mississippi River is now permanently safe from floods. I think 3 years after that report first came out, and about 2 weeks after the report was printed in 1927, a flood came along that tore the levees to pieces.

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Mr. Taber: To what extent will these dams reduce the flood hazard, first, in the Mississippi, and, second, in the lower reaches of these rivers?

Dr. A. E. Morgan: In the case of the Mississippi, no single tributary is ever controlling. If you could control the other tributaries as well as we are controlling the Tennessee, you would have the job done.

Mr. Taber: In other words, floods are due to the flood waters that go in from the Tennessee, the Ohio, Arkansas,

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and Red, but taken by themselves, no one of those rivers would create a serious situation at any one time, if there were no flood waters coming from some of the others.

Dr. A. E. Morgan: That is not quite the case. If you take the stretch from Cairo, Ill., down to the mouth of the Arkansas, or a distance of some 100 miles below the Arkansas alone would have practically nothing to do with it if the Ohio were controlled. If you should go below there, it would be possible to have a flood out of the Arkansas, and a big one, but it would not be so big as to be troublesome if the Ohio were controlled.

Mr. Taber: Have you estimated the amount of water coming down this river at flood times?

Dr. A. E. Morgan: Yes, sir; the flow of the Tennessee River was about 430,000 cubic feet per second at Chattanooga, and about 500,000 cubic feet per second at its mouth in the maximum flood of record.

Mr. Taber: How much of the flood will be taken off of that maximum by the work that you already have under construction?

Dr. A. E. Morgan: Roughly one-quarter. It would take off about 100,000 cubic feet per second.

[fol. 4399] Mr. Taber: That would be over a period of how long a time? This 100,000 cubic feet per second will fill up the dams in what length of time?

Dr. A. E. Morgan: It is not so simple to answer as that. As you get into the engineering factors, you will find it difficult to answer that in simple language. The Tennessee is so close to the Mississippi that with a warning such as was given in the present flood in the upper Ohio, the gates could be let open ahead of the flood and the water could be let out. We would lower our reservoirs on the lower Tennessee and get them empty so as to have the storage space available for the time they would be needed when the flood comes down from above. On the other hand, at the headwaters, we would close the gates at the beginning of a period of heavy rainfall, so a very large degree of control could be secured. The lower reservoirs are not used until needed, or right up to the time when the flood crest comes. Further up, as soon as the floods begin the gates are closed.

The Chairman: It depends on when it reaches the lower river.

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Dr. A. E. Morgan: Yes, sir.

Mr. Taber: Then, that would mean that all those dams will be operated on some supposed level, or that they will always be kept less than full in ordinary operations, so as to be ready to meet that situation.

Dr. A. E. Morgan: It is not necessary to do that. The Gilbertsville Dam, the lowest proposed dam on the Tennessee, can be used for illustration. We could keep that reservoir full all the time until we knew a flood was coming, because there we have plenty of time to empty it, before any flood crest would reach the lower river.

Mr. Taber: In other words, the local drainage area is not heavy—

Dr. A. E. Morgan (interposing): That is not the point.

Mr. Taber: The local drainage is not serious.

Dr. Morgan: No, sir; you do not get my meaning.

Mr. Taber: I do not think you got the meaning of what I said.

Dr. A. E. Morgan: The point is this: Suppose we have stored 3 or 4 million acre-feet. There is fine storage right at the end of the river. This Gilbertsville Dam would have wonderful storage.

Mr. Taber: You told us you would open that and let it out when you thought a flood was coming?

Dr. A. E. Morgan: Yes, sir.

Mr. Taber: And you said that, in other words, the local drainage into that dam was not heavy enough so that your situation generally would be upset because of that operation?

Dr. A. E. Morgan: Yes.

But it is a problem of so relating the operation of the upper and lower dams that the full benefit of the whole system can be realized. For instance, the Gilbertsville reservoir could be kept full, and the local drainage would not amount to anything. It could be emptied in time to be ready for flood water from above. At the Norris Reservoir, on the other hand, at this time of the year, say the 1st of April, the time has passed when a great flood is apt to originate in the hills; so we can begin to store water and fill it up. We know during what seasons great floods originate of the kind which affect the Mississippi, and we can manage the Norris Reservoir to get the greatest benefit.

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Mr. Cannon: You speak of a storage dam for flood relief and other purposes. What other purposes besides flood and power is it available for?

Dr. A. E. Morgan: For instance, the Norris Reservoir that we have there has 3,400,000 acre-feet of storage, one of the largest reservoirs in America. Now, during low water, when the Tennessee and Mississippi Rivers run low, we can let that water out and raise the water level for navigation; and below each one of our dams, if we have this storage controlled so we can release it at low water, we can save expensive dredging that otherwise would be necessary for navigation.

(Here follows one photolithograph, side folio, 4401)

FIRST DEFICIENCY APPROPRIATION BILL, 1936

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PRESENT AND PROSPECTIVE IMPROVEMENTS IN NAVIGATION

(See p. 138)

The CHAIRMAN. Now, we want a statement as to the present and prospective navigation on this river as the improvements proceed. What is the navigability of the river now, as to depth, height, and so forth?

Dr. A. E. MORGAN. The river now, below Wilson Dam, has a limit of navigable depth of about 4 feet.

The CHAIRMAN. Below Wilson Dam to the mouth?

Dr. A. E. MORGAN. Yes, sir.

The CHAIRMAN. How many miles is that?

Dr. A. E. MORGAN. It is 260 miles. That does not mean that it is all that shallow, but the controlling depth is about 4 feet.

The CHAIRMAN. I understand. Then that 260 miles from Wilson Dam down is 4 feet?

Dr. A. E. MORGAN. The controlling limit is 4 feet.

From Wilson Dam up to Chattanooga, about 205 miles, the controlling depth is 3 feet. From Chattanooga to Knoxville, which is about 184 miles, the controlling depth is 1 foot at present.

The CHAIRMAN. That is, no navigation at all?

Dr. A. E. MORGAN. Only in high water.

The CHAIRMAN. Now put in the record a detailed statement of the present and prospective development of this navigation, as to depth, as these dams and reservoirs are erected.

Dr. A. E. MORGAN. Yes, sir.

(The statement requested is as follows:)

Status of channel depths on Tennessee River

Successive pools of main river projects	From Paducah to Gilbertville	Gilbertville pool	Pickwick pool	Wilson pool	Whisper pool	Guntersville pool	Hales bar pool	Chattanooga to Chickamauga	Chickamauga pool	Watts bar pool	Coulter Shoals pool (to head of river above Knoxville)
Length of pools (miles).....	22.6	184.1	32.7	15.3	74.1	22.1	23.0	4.9	28.9	73.6	48.6
Project and river miles from mouth	Minimum channel depth (in feet) at ordinary low water, after completion of each project										
Depths prior to Tennessee Valley Authority construction.....	12.0	4.5	4.0	12.0	3.0	3.0	12.0	4.0	1.3	1.0	1.6
Wheeler, mile 274.8.....	(3)	3.6	5.0	(3)	12.0	3.0	(3)	4.0	1.3	1.0	1.6
Norris, mile 274.8.....	(3)	3.0	6.1	(3)	(3)	4.6	(3)	5.3	3.4	1.0	1.6
Pickwick, mile 262.7.....	(3)	3.1	12.0	(3)	(3)	4.6	(3)	5.3	3.4	1.0	1.6
Guntersville, mile 248.0.....	(3)	3.2	(3)	(3)	(3)	12.0	(3)	5.3	3.4	1.0	1.6
Chickamauga, mile 271.0.....	(3)	3.3	(3)	(3)	(3)	(3)	(3)	4.3	(3)	2.1	1.6
Fontana.....	(3)	3.6	(3)	(3)	(3)	(3)	(3)	4.3	(3)	2.1	1.6
Fowler Bend.....	(3)	3.0	(3)	(3)	(3)	(3)	(3)	4.3	(3)	2.1	1.6
Gilbertville, mile 22.6.....	(3)	12.0	(3)	(3)	(3)	(3)	(3)	4.6	(3)	12.0	1.6
Watts bar, mile 329.9.....	(3)	(3)	(3)	(3)	(3)	(3)	(3)	4.6	(3)	(3)	12.0
Coulter Shoals, mile 624.5.....	(3)	(3)	(3)	(3)	(3)	(3)	(3)	4.6	(3)	(3)	1.6
Raising Hales bar pool.....	(3)	(3)	(3)	(3)	(3)	(3)	(3)	12.0	(3)	(3)	12.0

1 With flashboards up at Hales bar. 2 After improvement of Florence Canal. 3 Project depth.

The pools across top of table are listed in succession from the mouth to the head of river. The projects to the left are listed in chronological order for construction. Reading horizontally from the left the resulting depth in each pool is shown, following the construction of a given project.

Norris, Fontana, and Fowler Bend, being storage projects on tributaries, increase the depths in unpooled sections by storage release in low-water season. This also maintains the low-water depth at the heads of pools and the storage of flood water reduces pool fluctuations during floods.

After a minimum depth of 12 feet has been obtained, the table shows "projected" depths shown are minimum gross channel depths. The 12-foot depth provides 3 feet of overdepth for the 9-foot draft required for the navigation project.

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[fol. 4402]

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Mr. Bacon: What is the other one?

Dr. A. E. Morgan: That is at Gilbertsville. That will back the water up 184 miles, across the State of Kentucky and the State of Tennessee.

Mr. Taber: There is not much drop there in that terrain, then?

Dr. A. E. Morgan: No, sir.

Mr. Bacon: What will that Gilbertsville Dam cost?

Dr. A. E. Morgan: The Gilbertsville Dam will cost about \$60,000,000, unless extra storage for Mississippi flood control is provided, in which case the cost would be \$14,000,000 more than that.

Mr. Taber: And how high would it be?

Dr. A. E. Morgan: It would be about 60 feet.

There is a possibility of raising the Gilbertsville Dam somewhat more; not because navigation needs it, but because you could get the cheapest flood-control storage that you could anywhere on the Mississippi system by raising it about 8 feet, if that were desirable.

Mr. Taber: That would make more power, too?

Dr. A. E. Morgan: It would make some more power, but that is not so important there as flood control. It would be principally flood storage. You would not be saving that for power.

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The Chairman: You did not finish on the navigation. You got off on a particular dam. The last I heard of navigation before these particular dams came up was that there was 3 feet between Wilson Dam and Chattanooga.

Dr. A. E. Morgan: With the completion of our system we would have a minimum of 9 feet of draft.

The Chairman: To where?

Dr. A. E. Morgan: From Knoxville to the Ohio River.

The Chairman: Now, you had 3 feet before. What is the next depth you are going to have; the next step you are going to have in navigation?

Dr. A. E. Morgan: Nine feet draft.

The Chairman: How far up the river?

Dr. A. E. Morgan: If this program—

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The Chairman: I am not talking about the whole program. Certainly the completion of one or two dams, or the ones that are now started, will add to navigation somehow.

Dr. A. E. Morgan: The completion of the Pickwick Dam project will give us 9 feet up to Wheeler Dam, and the completion of Wheeler Dam will give us 9 feet up to Guntersville.

The Chairman: From the mouth?

Dr. A. E. Morgan: The completion of Guntersville, which is now under way, will give us 9 feet up to Hales Bar. From the mouth it will be 9 feet except at the lower end below Pickwick and in the Florence Canal between Lock No. 1 and Wilson Dam.

The Chairman: You have not got up to above Chattanooga. What is that dam up there—Chickamauga?

Dr. A. E. Morgan: Yes; that is Chickamauga Dam. That will give us 9 feet except as I just stated, and as soon as the lower dams are finished it will be 9 feet all the way from the mouth. That will give us that depth up to near Rockwood, in the iron, coal, and limestone region. We have some of the big iron possibilities of America there, I am told.

The Chairman: And the completion of your Hiwassee Dam does nothing except as a stand-by reservoir to help this navigation at low water.

[fol. 4403] Dr. A. E. Morgan: Navigation and flood control; yes. Each dam as it is completed gives 9 feet draft above it.

The Chairman: Then with the dams now under way you will have not less than 7-foot depth up above Chattanooga?

Dr. A. E. Morgan: Yes, sir.

The Chairman: To where?

Dr. A. E. Morgan: To about Rockwood.

The Chairman: And about how many miles above Chattanooga?

Dr. A. E. Morgan: About 70.

Now, there is one little gap in there that I have not described. The Hales Bar Pool, which is below Chattanooga, will have to be raised or considerable dredging will have to be done in between, or a low-navigation dam built.

The Chairman: That will not be expensive?

Dr. A. E. Morgan: About \$4,000,000.

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The Chairman: What will have to be done, then, to give navigation to Knoxville?

Dr. A. E. Morgan: There will have to be two more dams.

Mr. Chairman: Where will they be?

Dr. A. E. Morgan: At Watts Bar—which was called White Creek before—and Coulter Shoals. Those will give navigation to Knoxville.

The Chairman: How many feet?

Dr. A. E. Morgan: Nine feet draft except at the points I indicated.

The Chairman: Is the dam at the mouth of the Tennessee necessary for nine feet draft?

Dr. A. E. Morgan: Yes, sir.

The Chairman: At a cost of \$160,000,000?

Dr. A. E. Morgan: No; only \$60,000,000—the Gilbertsville Dam.

The Chairman: That is necessary for 9 feet?

Dr. A. E. Morgan: Yes, sir.

The Chairman: So, under the present program, we are aiming at 7 feet navigation up to Knoxville?

Dr. A. E. Morgan: No; 9 feet. This Gilbertsville Dam on the Tennessee itself, not on the Ohio—

The Chairman (interposing): You have not got an estimate for that, have you? That is not included in this estimate?

Dr. A. E. Morgan: It is included in our total estimate; yes—not for appropriations this year.

The Chairman: I understand. It is included in your total estimate; it is included in your entire plan. But I am talking about the estimate that is before us now.

Dr. A. E. Morgan: For next year?

The Chairman: Yes.

Dr. A. E. Morgan: No; it is not included in that.

The Chairman: We are working now for the next goal of 7 feet up to above Chattanooga.

Dr. A. E. Morgan: Nine feet draft above Chattanooga.

The Chairman: Then in order to get 9 feet from the mouth it would take \$60,000,000 for the Gilbertsville Dam and the two dams, Coulter Shoals and Watts Bar?

Dr. A. E. Morgan: About \$50,000,000 more.

The Chairman: About \$50,000,000 more; to give you 9 feet clear up to Knoxville?

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Dr. A. E. Morgan: Yes, sir. We have now, with the finishing of the dams that are now being built, 7 feet depth up to Pickwick and 9 feet draft from there to above Chattanooga. It is only below Pickwick that we would have 7 feet depth; the rest of the way it is 9 feet draft as required for the 9-foot project.

The Chairman: In other words, you need water high up? [fol. 4404] Dr. A. E. Morgan: Yes, sir.

The Chairman: That is just because some of the dams are not backed up?

Dr. A. E. Morgan: It is just because the lower dam is not completed—the one at Gilbertsville, way down below.

The Chairman: Have you any record of what the difference in benefit to navigation is—I mean, that is actually and practically put into effect—between 7 and 9 feet?

Dr. A. E. Morgan: This is the difference: This 9-foot channel on the Tennessee is part of a 9-foot channel from Pittsburgh down to the Mississippi and on down to the Gulf, and from St. Paul down the Mississippi all the way, and from Chicago down the Illinois River all the way. About 5,000 miles is being built to a channel, for boats with a 9-foot draft. If a certain section there has only 7-foot depth, you have to have a different class of craft on it.

The Chairman: You are sure about the boats being built for a 9-foot channel?

Dr. A. E. Morgan: I say they are going to be built for the channel that is provided. The Government for years past has set a 9-foot draft channel as the standard. Now, if it is the standard in all parts of 5,000 miles of waterway except on the lower Tennessee, then the boats that are built for the rest of the system cannot effectively use that part. That is the difference.

The Chairman: There ought to be another difference. There ought to be a difference in the capacity of the boats; because a 9-foot channel ought to carry a greater tonnage in one load than a 7-foot channel.

Dr. A. E. Morgan: The difference is even more than I have indicated, because, as it is now, that 7 feet is just dragging on the bottom of the river, and a boat with a 7-foot draft would scrape the rocks on the bottom of the river; whereas our 9 feet is 9 feet of draft, with about 3 feet under it. So it is really comparing about 7 feet with 12 feet.

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The Chairman: Nine feet of free water?

Dr. A. E. Morgan: Yes, sir; water for boats of 9-foot draft, with 3 feet of water underneath.

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Dr. A. E. Morgan: There is a silting problem there, and some small reservoirs have largely silted up since they have been built. They are very small ones. We are undertaking as part of our program, to stimulate agricultural change, to get land out of plow crops into grass crops, and we are already affecting that situation. But our storage reservoirs are large enough so that if it takes a hundred years to change that culture back we still will not have lost much. We are making definite provision for silt deposit in the design of each storage reservoir on the tributaries.

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Dr. A. E. Morgan: Then we are making very careful studies of the silt deposits on all the rivers where we are planning to build dams.

Mr. Thurston: Is it possible that some very important plant may be erected at a given point, we will say near a dam, and that it will really, in a few years, become almost valueless because the storage has diminished so greatly?

Dr. A. E. Morgan: No; we are building no structures that would be menaced in the next century. We are working into a program of erosion control for a long-time program.

[fol. 4405]

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Mr. Taber: It is a question of adding and subtracting.

Dr. A. E. Morgan: It is not a matter merely of adding and subtracting. We can protect Chattanooga locally only by levees. That is the only way to protect it locally. Now, if we should build levees that would take care of the 1917 flood, and build them so that the city would consider itself safe to build behind them, then, if a big flood should come along, the city would be much worse off than if it had not provided that protection. Therefore, before we are safe in building levees at Chattanooga, we must be sure that we are going to be in a position of holding extreme flood stages down to a point where the levee will not be overtopped.

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We have no business building levees that will be overtopped once in a while, because that might largely destroy the city. It would be worse off than if it had no levees. Now, it is impossible to build levees high enough to give that protection without first providing reservoir control. If we can first cut big floods down to reasonable limits, then we can safely build levees, but we do not dare to build them if they are to be overtopped. If levees are built, and people build behind them, and they are liable to be overtopped, they are worse off than if they had no levees.

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Mr. Taber: Are you planning to have a power lay-out at this dam?

Dr. A. E. Morgan: No, sir; not at present.

Mr. Taber: Is this a navigation dam, or is it a power dam primarily?

Dr. A. E. Morgan: It is a navigation and flood-control project. There is a possibility of power whenever it is justified.

Mr. Taber: How many acre-feet of water will there be in this reservoir?

The Chairman: Three hundred thousand acre-feet of storage will be available for flood control, according to the statement, and the elevation is 595 feet.

Mr. Taber: What territory does this dam protect against floods?

Dr. A. E. Morgan: The storage given for flood control is 300,000 acre-feet.

Mr. Taber: What territory below is protected by this dam?

Dr. A. E. Morgan: It will primarily affect the Mississippi.

Mr. Taber: The lower Mississippi.

Dr. A. E. Morgan: Yes, sir. It will have its effect all the way along but its primary effect will be on the Mississippi.

Mr. Taber: It is not a major item so far as flood control on the Mississippi is concerned, is it?

Dr. A. E. Morgan: There is scarcely any such thing as a major item in flood control in the Mississippi. It must be an accumulation of various items to relieve the Mississippi.

Mr. Taber: This provides how much water back to Chickamauga?

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Dr. A. E. Morgan: It will provide 9 feet. It does not go back to Chickamauga, but it goes to Hale's Bar, which is a private dam below Chattanooga. It will provide 9 feet there, up to Hale's Bar.

Mr. Taber: That is how far?

Dr. A. E. Morgan: About 82 miles.

Mr. Taber: How far is it from Hale's Bar back to Chickamauga?

Dr. A. E. Morgan: About 30 miles.

[fol. 4406]

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The Chairman: Is it for navigation alone, or for navigation and power?

Dr. A. E. Morgan: It is flood control and navigation.

The Chairman: No power in it at all?

Dr. A. E. Morgan: It would have power possibilities, though we are not estimating for power at present.

The Chairman: How near is the Norris Dam to it?

Dr. A. E. Morgan: About 74 miles.

The Chairman: Watts Bar is not on the Tennessee River, is it?

Dr. A. E. Morgan: Yes. That is the same as White Creek. That is on the Tennessee River. Above Chattanooga you first come to the Chickamauga Dam, then to the Watts Bar Dam, and then to Coulter Shoals Dam.

Mr. Taber: How far is it to Watts Bar from Chickamauga?

Dr. A. E. Morgan: That is about 59 miles.

Mr. Taber: According to the way they have got this laid out for me, which was put on by somebody here, it is only about half as far from Watts Bar to Coulter Shoals as it is from Chickamauga to Watts Bar.

Dr. A. E. Morgan: Fifty-nine miles is the length of the reservoir above the Chickamauga Dam, and it is 74 miles from Watts Bar Dam site to Coulter Shoals Dam site. The pool of Watts Bar would be 74 miles, and Coulter Shoals is 53. The Coulter Shoals Dam would make the Tennessee River navigable for 4 miles above Knoxville, to where it is formed by the junction of the French Brook and Holston Rivers.

The Chairman: Coulter Shoals is not above Knoxville?

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Dr. A. E. Morgan: Coulter Shoals is about 45 miles below Knoxville, on the main river.

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Maintenance of Stream-Flow Stations

Dr. A. E. Morgan: I have a map indicating the stream-flow stations that we are working on.

The Chairman: Suppose you finish your break-down.

Dr. A. E. Morgan: In the matter of rainfall we are co-operating with the United States Weather Bureau, and we have established 189 rainfall stations throughout the area, in addition to those of the Weather Bureau. We need those for our weather forecasting, for building our dams, and for operating them afterward.

I have a map indicating the locations and the amount of rainfall.

The Chairman: Do you expect to maintain all of those stations?

Dr. A. E. Morgan: Not all of them, but we will maintain part of them until we get a good record of that section of the country. Some of them we will maintain permanently.

The Chairman: You have regular men stationed there, or are they mostly accommodation men?

Dr. A. E. Morgan: They are men who go out in the morning and in the evening, farmers who live near by.

The Chairman: Do you pay them for it?

Dr. A. E. Morgan: Yes; it varies, depending on how far away a man lives. We are working out a process now that seems to be satisfactory, of radio recording whereby you put a battery in the station with a little radio outfit, and that information is transmitted by radio. Then we hope to develop a radio receiving outfit in our office, so there is need for nobody to look after the station. It would work automatically. About once in 6 months it would be necessary to put in another battery. We hope in time to have automatic recording for those stations.

[fol. 4407] The Chairman: Recording of what?

Dr. A. E. Morgan: We worked that up particularly for the water stages. We can use it also for temperature and for rainfall.

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The Chairman: That is, you mean the stage of the water in the river?

Dr. A. E. Morgan: Yes. Then there are silt investigations. We are working on the question as to how fast reservoirs will silt up.

The Chairman: It seems to me you ought to be working on the question of how to stop erosion.

Dr. A. E. Morgan: To do that we have to get some measurements as to the kind of problem we are handling.

Studies of Silting of Dams

When we went down there we had estimates on the Norris Dam ranging all the way from a hundred to two thousand years as to the time it would take to silt the dam. That is the range within which the engineers were guessing. We are making studies to know what our problem is.

The Chairman: You are still guessing?

Dr. A. E. Morgan: We are guessing, but within narrower limits as we secure definite data.

[fol. 4408]

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Excerpts Read Into the Record by Defendants from Complainants' Exhibit No. 116, being "Hearings Before the Subcommittee of the Committee on Appropriations, House of Representatives, 75th Congress, 1st Session."

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Dr. Arthur E. Morgan: . . .

For instance, in connection with the Norris Dam, all during the flood on the Ohio during this last winter we completely closed the gates of the Norris Dam and stored about a million and a half acre-feet of water, enough to make a substantial difference in river stages below.

It is quite probable that the Norris Dam saved the city of Cairo. There were two towns there side by side, Cairo and Mound City, each surrounded by levees. The Mound City levee failed and the Cairo did not. It was by taking the action we did at the Norris Dam that the flood stage at Cairo was reduced by about 6 inches.

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The Norris Dam did not cut down the flow quite enough to save Mound City, but did cut it down enough to save Cairo.

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May I take up the matter of the general planning of the system?

We have there a river system draining somewhat more than 40,000 square miles. For 650 miles of that river, from Knoxville to its mouth, the Government has adopted a policy of making it navigable with a channel for vessels of 9-foot draft, which means 12 or 13 feet minimum depth of water. It is necessary to have storage for regulating navigation stages and for flood control, and incidentally it is valuable for power. The further we can see ahead, the more accurately we can appraise the total possibilities, and the better we can design each particular project and determine the feasibility and the cost of the several possible dams. We must determine whether it is better to make a dam higher on the main river or to get some storage on the tributary streams, and how large the dams on the tributary streams should be as parts of the single unified system.

In the general development of such public works in this country such thoroughgoing studies as we are making would have saved their cost many times over.

During the course of more than 50 years the official estimates of the total cost of the Mississippi flood-control system, made by those in responsible charge, have been, in general, several hundred per cent in error from the first official estimate in 1874 down to the 1927 flood. An estimate would be carried for years until a flood would demonstrate its inadequacy, then a revised and enlarged estimate would [fol. 4409] be made and carried until another flood would bring about a further revision. That is not the best way to plan a great program. With proper planning it is possible to eliminate a very large part of that learning by catastrophe. We can learn better by thoroughgoing engineering study.

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Mr. Taber: What jobs on the river are for flood control, do you think?

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Dr. Morgan: Different degrees in various cases. The Gilbertsville project is especially valuable for flood control. In fact, I think that the whole cost of the Gilbertsville Dam and Reservoir would be justified for flood control alone, and that is the largest unit in the entire project.

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Mr. Boylan: What is the nature of the navigation on the river now?

Dr. Morgan: It is very largely prospective, for the reason that both above and below this there are rocks and shallows that largely prevent navigation. The Gilbertsville and Pickwick Dams will carry vessels of 9-foot draft up to the Wilson Dam, and these other dams will carry it above. Above there we have a low-water depth of a foot and a half. That will be made a low-water depth of 12 feet by the Guntersville Dam.

There cannot be any extensive navigation until the dams are built. It is somewhat like saying, "I want to build a railroad through this country; how much did that railroad carry last year?" before it was built.

We have made very careful studies of what we considered to be the conservatively probable traffic on that river.

Mr. Boylan: What kind of traffic?

Dr. Morgan: It will be coal, oil, gasoline, bauxite, aluminum oxide, phosphates, steel, lime, minerals, marble—

Mr. Boylan: These shipments just affect the Tennessee Valley development, do they, or will you get them from further up the river?

Dr. Morgan: There will be shipments from further up the river when navigation is made feasible.

Mr. Boylan: But that is purely speculative?

Dr. Morgan: Not any more speculative than any economic development. Until your store is actually built, or your hotel, it is speculative whether it is going to produce. We think that freight savings of from \$1 to \$1.25 a ton will be possible just as soon as water-carrying can be provided, and that if that waterway had been available for operation for the past 5 years, so that boats could have been built and put in operation, today, it would be carrying about 6,000,000 tons of freight, with a saving of \$1 to \$1.25 a ton.

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[fol. 4410] Mr. Boylan: Is that from the valley itself—from the Tennessee Valley—or from further up the river?

Dr. Morgan: It would include both. The traffic would be down the Ohio and up the Tennessee and down the Mississippi. It would have its share of the traffic of the Mississippi River system.

Mr. Boylan: What is the nearest terminal now on the river to the TVA?

Dr. Morgan: On the Tennessee?

Mr. Boylan: Yes.

Dr. Morgan: We have terminals there now.

Mr. Boylan: Before you reach the TVA, how far do they come down?

Dr. Morgan: The TVA takes in the entire Tennessee River area.

Mr. Boylan: I am trying to find out how far under your existing navigation a ship can navigate the river. Can you navigate it at all?

Dr. Morgan: Yes. Last year's movement was about 2,000,000 tons. It is used, and has been extensively used in the past, but under great difficulty because of the shallows.

Mr. Boylan: How far is it used, and to what point?

Dr. Morgan: Cement is hauled from the Mississippi River up the Ohio and up the Tennessee for about 400 miles, and then you cannot go any further because of shallows.

Mr. Boylan: Is that clear navigation up to the confines of the TVA, that 400 miles?

Dr. Morgan: You see, the whole of the Tennessee River is in the TVA area.

Mr. Boylan: What I am trying to find out is whether or not there is any navigation on the river now, and where it is coming from.

Dr. Morgan: Some comes from within the Tennessee Valley, and some comes from the Ohio River and the Mississippi River.

Mr. Boylan: What is the nature of the articles transported?

Dr. Morgan: Steel, cement, crushed limestone, gravel, oil, gasoline.

Mr. Boylan: When they reach the terminal—that is, as far as they can go now—what is done with each shipment?

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Is there a terminal there where they have to transship by rail, or what?

Dr. Morgan: No; there is not, because it is just coming into existence. There are little terminals, but they are not modern at all. Where you have only a foot and a half of water, you do not have much navigation. They just run up in the high water, and run up to a bank or small terminal. There are lumber companies that use the lower river for shipping their lumber out.

Mr. Boylan: Can they get it out?

Dr. Morgan: Yes; except in low water.

Mr. Boylan: How far can they get it out?

Dr. Morgan: The biggest shippers now are about 200 miles upstream from the mouth of the river.

Mr. Boylan: But they can ship only 200 miles?

Dr. Morgan: That takes the shipment to the Ohio River, where there is a 9-foot depth.

[fol. 4411] Mr. Boylan: Then what do they do with their merchandise?

Dr. Morgan: They ship 200 miles on the Tennessee, and then take it up and down the river, on the Mississippi and the Ohio. I think that this will answer your question—there is approaching completion today an inland navigation system on the Mississippi and its tributaries. It is not now in existence; but if no interruption occurs, 5 or 10 years from now it will be in existence and that will provide a channel for vessels of 9-foot draft downstream from St. Paul on the Mississippi, from Chicago on the Great Lakes, from Pittsburgh on the Ohio, and from Knoxville on the Tennessee down the Ohio and down the Mississippi, and there will be five or six thousand miles of such channel.

Now, the people of America are not fully aware of what happened to the middle of the United States when the Panama Canal was built. It has brought a paralysis to the interior of the United States. The Pacific and the Atlantic coasts have grown rapidly, while the interior of the country has gone back or largely stood still. The State of Iowa has actually lost in population, I believe. Missouri has largely stood still. The interior of our country cannot thrive until you have transportation more nearly on an equality with the rest of the country.

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Mr. Boylan: You might say, then, that prior to the advent of the TVA there was no navigation on the Tennessee River?

Dr. Morgan: There was and has been considerable navigation, but under great difficulty.

Mr. Boylan: But practically prohibitive navigation?

Dr. Morgan: Yes; except for the lower river; because the river got down to a depth of a foot and a half. Here is a map; those dark lines are the lines of navigation that are being completed now.

Mr. Boylan: Can you get through to the Gulf now?

Dr. Morgan: Yes.

Mr. Boylan: From the Tennessee Valley?

Dr. Morgan: Yes.

Mr. Boylan: From the Tennessee Valley?

Dr. Morgan: Yes.

Mr. Boylan: What is the mean depth of the water?

Dr. Morgan: Below Wilson Dam it gets down to 3 and 3½ feet.

Mr. Boylan: You can use barges, canoes, and things like that?

Dr. Morgan: With the finishing of Pickwick Dam the minimum depth below Wilson Dam will be probably 5 feet, and with the completion of the Gunter'sville job the minimum depth will be 12 feet.

Mr. Boylan: At low water?

Dr. Morgan: At low water.

Mr. Boylan: Then you can use fair-size schooners and barges?

Dr. Morgan: Anything that can go in interior waters will travel there.

Mr. Boylan: But this will all be in the future?

Dr. Morgan: I think that within 5 years of the completion [fol. 4412] of this improvement it can be a reality. As to the possible navigation after the completion of the channel, we have made very careful estimates, of which the details are available. We believe that almost immediately on the completion of these dams we will have a traffic of about 6,000,000 tons on the river, and we will save somewhere between \$1.10 and \$1.25 a ton of freight on all of that traffic.

Mr. Ludlow: How much of that traffic will be outgoing and how much incoming, the relative percentage?

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Dr. Morgan: I will give you that in just a moment.

That traffic of 6,000,000 tons would be the immediate result. We have two or three of the ablest men on water transportation in the country on our staff. They report those figures. They believe that within 20 or 25 years that traffic would at least double. We have great mineral resources, great resources there that simply cannot be used at the present time. The freight rates are extremely adverse to that region, and my personal belief is that when water transportation gets to going well the railroads will actually benefit by it because anything that brings about the general prosperity of that country will mean more business for the railroads. Each type of transportation will have its own business.

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Dr. Morgan: The operation of Norris Dam differs substantially from that of Wilson Dam or the Wheeler Dam. Norris Dam will be held at low elevations during the winter and during the first part of the flood season, so that the storage it gathers for power purposes will also be valuable for flood purposes. That is, during the fall we run the water down low and use up the power storage, and we hold it down there during the season when floods ordinarily occur, so that the same storage capacity that is good for floods is also good for power to some extent. During the latter part of the highwater season we close the gates and store the stream flow. A flood may occur and furnish part of that water supply. If not, the ordinary flow will do so.

Water Levels of Norris Dam

Then about the 1st of April the reservoir will be filled to the summer storage level, because we are almost sure that there will be no excessive floods later than that.

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Dr. Morgan: Yes. I am speaking in general terms. We have worked this out, and the management of that reservoir is one of the technical problems of the TVA, and the simple statement that I make would require qualifications as the problem is worked out in detail.

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Mr. Taber: Your instructions to your operating division would naturally be on the basis of a current situation?

Dr. Morgan: Yes.

[fol. 4413] Mr. Taber: Rather than anything else. Your operating group would never get instructions from year to year?

Dr. Morgan: They would get general instructions, but if, for instance, we found that the ground was very dry in a certain year and would absorb much rain, if January had been an exceedingly dry month and the streams were empty, and so forth, we could assume an absorption of rainfall more than we could if it had been a wet month and the ground was full of water. Such practical facts would enter into determining current action.

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Dr. Morgan: We have made a report of the total situation with reference to that flood and the part that Norris Dam took in it, and the control exercised. We would like to include a copy of that report in the record, if we may.

(The report referred to is as follows:)

Flood-Control Activities of the Tennessee Valley Authority
During Recent Ohio-Mississippi River Flood and Possibilities of Additional Flood-Control Benefits With Completion of Tennessee Valley Authority Program in Tennessee River System

During the flood of January 1937 the Tennessee Valley Authority dams were ready to be used for flood storage. The entire flow of the river above the Norris Dam was stored throughout the whole duration of the flood. The effect was substantially to lower flood heights on the lower Ohio and adjacent Mississippi.

No universal rule can be stated as to combination works for flood control, navigation control, and power development. With proper engineering planning and management, the various uses often can be combined in single structures with greater economy and effectiveness than can be secured by single-purpose developments. The possibility of combining varied purposes, and the economies resulting from such combinations, vary in different projects.

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It is important to point out that during the recent flood on the Ohio and Mississippi Rivers the Authority had only three dams in operation—Wilson and Wheeler Dams, on the main Tennessee River, just above Florence, Ala., and Norris Dam, on the Clinch River, a headwater tributary of the Tennessee, 80 miles above its junction with the Tennessee. Wilson Dam, constructed before the Authority was created was not designed or built with provision for the storing of flood water. Therefore, only Wheeler and Norris Dams, both constructed by the Authority, were available for flood-control operations at the time of this flood. Norris Dam, one of three proposed tributary stream dams, completely controls the flood run-off from 2,950 square miles. This is about 7 per cent of the total area of the Tennessee River Basin. [fol. 4414] Wheeler Dam, one of nine proposed main river dams, has a total drainage area above it of nearly 30,000 square miles, with only about 500,000 acre-feet capacity for flood storage. This capacity in this single dam is wholly inadequate to afford complete control of the flood run-off from above.

Obviously, with these limited storage facilities available at present, nothing approaching adequate control of the floodwaters from the Tennessee River can be expected. The Authority not only does not claim to be able at present to effect such complete flood control, but it fully realizes its inability to do so. Moreover, it recognizes the need for the completion of the dams under construction and those proposed, both on the main stream and tributaries, if adequate flood-control benefits are to be achieved.

During the recent flood the water-control activities of the Authority were beneficial to flood conditions on the Ohio and Mississippi Rivers. Throughout the entire flood period during January the flood-storage space available at its two dams for flood-control purposes was utilized to the very best advantage. There were absolutely no other water uses during that period.

Norris Reservoir, after storing throughout the spring flood season of 1936, during which time Chattanooga in particular and the Tennessee River in general benefited through the material reduction of flood heights, was steadily drawn down during the dry season. This lowering of Norris began the middle of June and continued till early in

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December, the releases being timed to best serve navigation on the lower Tennessee River to make ready for the flood season which usually begins during the latter part of December and lasts until the end of March or early in April. At the low point the reservoir was nearly 60 feet below the top of gates and had room for more than 1,500,000 acre-feet of storage, nearly all of which was actually used during the period of the Ohio-Mississippi flood in storing all the floodwaters above the dam. No water releases were made from Norris during the entire flood period in January. The flood-storage space in Wheeler Reservoir was also used to the best advantage during the flood period.

Engineers of the Authority kept in touch daily with the progress of the flood down the Ohio and into the Mississippi, using the long-distance telephone and other means at their disposal, and this gave them the information needed for the operation of their dams so as to be of the most benefit in the flood emergency on those rivers.

The flood at Cairo, Ill., at the junction of the Ohio and Mississippi remained above the dangerous stage of 58 feet for about 15 days during which time about 964,000 acre-feet of water was stored in Norris and Wheeler Reservoirs. This represents an average reduction of about 32,000 cubic feet per second from the flood flow of the Tennessee River. In other words, if the reservoirs had not been in operation at [fol. 4415] the time, the Tennessee River would have contributed an average of 32,000 cubic feet per second more to the flood throughout the 15-day critical period than it actually did contribute.

At no time during the critical period above 58 feet at Cairo did the Tennessee River discharge its full natural flow. In the month of January during the flood period, 1,250,000 acre-feet of water was stored in Norris alone, during which time the reservoir rose more than 40 feet to within about 3 feet of the top of spillway gates.

The net effect of the Tennessee Valley Authority flood-control operations on the Ohio and Mississippi Rivers was a real benefit at a crucial time when each additional inch in flood height was a very serious matter, possibly serious enough to make the difference between holding or losing levees. After the completion of all of the proposed dams

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on the main stream and the tributaries of the Tennessee River, the beneficial flood-control effect on the Ohio and Mississippi Rivers will be several times as great.

Preliminary estimates indicate that with the completion of Gilbertsville, Pickwick, Wilson, Wheeler, Gunter'sville, and Chickamauga Dams on the main stream, and Norris and Hiwassee Dams on tributary streams, the recent flood crest could have been reduced about $2\frac{1}{2}$ feet at Paducah and about 2 feet at Cairo. The addition of Watts Bar and Coulter Shoals Dams on the main stream and Fontana Dam on a tributary stream would add further benefits in the lowering of flood heights at Paducah and Cairo.

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(Here follows a photolithograph, side folio 4416)

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SECOND DEFICIENCY APPROPRIATION BILL, 1937

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Tennessee Valley Authority annexed budget—Summary

	Actual, prior years	Actual, fiscal year 1936	Estimated, fiscal year 1937	Estimated, fiscal year 1938
Revenue:				
Navigation, flood-control, and hydroelectric program.....	\$2,302,565	\$2,027,700	\$2,469,131	\$4,517,548
National-defense program.....	95,176	52,980	94,791	85,410
Other undistributed.....	2,918	2,886	3,500	2,800
Total revenue.....	2,400,659	2,114,256	2,577,422	4,605,758
Expenditures (obligation basis):				
Navigation, flood-control, and hydroelectric program.....	48,503,545	50,397,223	45,067,344	48,877,970
Fertilizer and soil-conservation program.....	2,700,349	3,518,503	3,907,402	3,568,800
National-defense program.....	1,414,110	630,193	606,965	311,144
Regional studies, experiments, and demonstrations program.....	402,000	458,866	273,231	357,343
Other undistributed expenditures.....	935,256	394,125	1,365,562	43,300
Total expenditures.....	51,954,260	55,398,943	51,270,124	53,106,456
Net appropriation requirements.....	49,461,679	53,484,687	48,692,702	48,500,000
Means of financing:				
Appropriations, prior years.....	75,000,000			
Prior year's appropriation available in 1936.....	-25,518,321	25,518,321		
Tennessee Valley Authority fund of 1936.....		34,000,000		
Property received from War Department.....		757,086		
1936 appropriation available in 1937.....		-8,790,702	8,790,702	
Tennessee Valley Authority fund of 1937.....			39,600,000	
Contract authorization for 1938.....				5,500,000
Estimate of appropriation for 1938.....				43,000,000
Total available funds.....	49,461,679	53,484,687	48,692,702	48,500,000
Adjustment to cash basis.....	-1,956,079	-4,653,263	-5,690,702	500,000
Total carried to general budget summary.....	47,505,600	48,831,424	43,002,000	49,000,000

JUSTIFICATION OF ESTIMATES

The above statement presents the actual and estimated revenues, expenditures, net appropriation requirements, and means of financing of the Tennessee Valley Authority for the fiscal year 1938 and prior periods. The net appropriation requested for the fiscal year 1938 is \$43,000,000, or an increase of \$3,100,000 over the appropriation for 1937. In addition to the appropriation requested for 1938, a contract authorization of \$5,500,000 is requested to provide for equipment that must be ordered in that year. These two amounts make up the total of \$48,500,000 that will be required. Comparative statements of revenues and net-appropriation requirements, by programs and projects, follow, in which the estimates for 1938 are justified in detail.

It will be noted that the entire amount of the estimate for 1938 is covered by the appropriation of new funds and the contract authorization. In 1937 nearly a fifth of the total available fund is composed of the reappropriated unobligated balance of the 1936 appropriation. It is estimated that no such balance will be available for 1938.

Receipts, by programs, Tennessee Valley Authority

	Actual, prior years	Actual, fiscal year 1936	Estimated, fiscal year 1937	Estimated, fiscal year 1938
Navigation, flood-control, and hydroelectric program:				
Structures and improvements.....				
Norris project.....	\$796,291	\$487,504		
Wheeler project.....	339,170	312,568		
Pickwick Landing project.....	31,513	305,121	\$354,656	\$343,302
Birmingham project.....			35,100	215,894
Guntersville project.....		27,194	222,350	394,420
Chickamauga project.....		1,879	31,225	56,826
Electrical plant and equipment—repayments.....	36,117	36,401	78,000	100,000
Subtotal.....	1,193,087	1,172,984	724,131	974,641



APPENDIX "II"

Receipts, by programs, Tennessee Valley Authority—Continued

[fol. 4417]

Navigation, flood-control, and hydroelectric program—Continued.

Operations:

Water-control operations:

- (a) Norris project
 (b) Wheeler project

Subtotal

Electricity operations:

- (a) Operating revenues
 (b) Nonoperating revenues

Subtotal

Total navigation, flood-control, and hydroelectric program

National-defense program: Maintenance of idle property

Other undistributed: Administrative and service

Total receipts

	Actual, prior years	Actual fiscal year 1936	Estimated, fiscal year 1937	Estimated, fiscal year 1938
(a) Norris project			\$306,850	\$306,850
(b) Wheeler project			81,150	11,055
Subtotal			388,000	317,905
Electricity operations:				
(a) Operating revenues	\$1,194,070	\$827,589	1,316,000	3,150,000
(b) Nonoperating revenues	6,398	27,507	61,000	75,000
Subtotal	1,200,468	855,096	1,377,000	3,225,000
Total navigation, flood-control, and hydroelectric program	2,393,555	32,027,760	2,489,131	4,517,546
National-defense program: Maintenance of idle property	86,108	82,930	86,791	85,410
Other undistributed: Administrative and service	2,918	3,566	3,500	3,500
Total receipts	2,482,581	2,114,256	2,579,422	4,606,456

[fol. 4418]

Justification of Estimates

The estimated receipts of the Authority for 1938 are \$4,606,456, an increase of \$2,027,034 over those estimated for 1937, and an increase of \$2,492,200 over those actually received in 1936. The major portion of these receipts is derived from the operating phases of the navigation, flood control, and hydro-electric program. These operations are becoming increasingly important as the demand for electric energy continues to mount, and as some of the new generating plants of the Authority are being brought into operation. This is evidenced by an increase in receipts from electricity operations from \$855,096 in 1936 to an estimated total almost double that amount, or \$1,377,000 in 1937; and an estimated total almost four times the 1936 amount, or \$3,225,000, in 1938. This estimate is explained in detail in a following statement.

Receipts from water-control operations consist principally of income from employee-housing facilities at the Norris and Wheeler projects, which are entering the operating stage. This income approximately offsets the expense of operating the facilities. At Norris, however, an increasing amount of revenue is to be derived from the recreational and other use of the reservoir and the lands around its margin by the public.

Receipts under the structures and improvements section of this program are of two types. The first of these is composed of payments from employees for food, rent, electricity, water, etc., at the construction camps. It is purely incidental to the construction activities. The second consists of repayments from municipalities and cooperative associations which have purchased electrical distribution facilities from the Authority. It will serve, eventually, to liquidate the Authority's investment in such properties. The increase for 1938 over 1937 is accounted for by the larger volume of such transactions outstanding, and by the expected improvement in the operating position of the newer cooperative associations, a number of which are still in the organization stage.

Receipts under the national defense program represent payments for rent, electricity, water, etc., from employees living in the villages on the nitrate-plant reservations at Muscle Shoals. They serve to reduce the cost of maintaining these properties in stand-by condition. Receipts under the other undistributed section of the Budget consist of income from the sale of salvaged materials of a general character, the sale of information bulletins, and sundry other similar sources.

APPENDIX "II"

Net appropriation requirements—All programs

[fol. 4419]

	Actual, prior years	Actual fiscal year 1936	Estimated, fiscal year 1937	Estimated, fiscal year 1938
I. Navigation, flood-control, and hydroelectric program.....	\$44,109,980	\$48,309,463	\$42,608,213	\$44,300,424
II. Fertilizer and soil-conservation program.....	2,709,349	3,518,503	3,897,402	3,506,600
III. National defense program.....	1,328,002	747,203	319,774	225,734
IV. Regional studies, experiments, and demonstrations.....	402,000	458,899	273,231	357,242
V. Other undistributed expenditures.....	932,338	390,559	1,592,082	50,000
Total.....	49,481,679	53,484,687	48,090,702	48,500,000

APPENDIX "H"

[fol. 4420] Justification of Estimates

The above statement presents in summary form actual and estimated net appropriation requirements for the entire Tennessee Valley Authority program. In this summary and in all of the following statements actual and estimated receipts have been included in order to show the amount of appropriated funds required to finance the various programs and projects.

Since the above estimates for the individual programs are explained in detail in the following text, none of this will be duplicated at this point. It should be noted, however, that the total appropriation requirement for 1938 is \$190,702 less than the total for 1937. This decrease is accounted for by substantial reductions in the estimates for the fertilizer and soil conservation, national defense, and other undistributed expenditures programs. These reductions are offset in part by an increase of \$1,752,211 for the navigation, flood control, and hydroelectric program and an increase of \$84,011 for the regional studies, experiment, and demonstrations program.

The increase for the navigation, flood control, and hydroelectric program is due primarily to the heavy construction schedule involved in completing or continuing work on the six projects now under construction. Included in the estimate for dams under construction is \$6,000,000 to provide in part for generator installations in the Gunter'sville and Chickamauga projects. These installations have been scheduled to meet increased load requirements of the area. Without these installations water power created by the dams will be wasted and substantially increased revenues will be lost.

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I. Navigation, Flood Control, and Hydroelectric Program

[col. 4421]

Summary

	Actual, prior years	Actual fiscal year 1936	Estimated, fiscal year 1937	Estimated, fiscal year 1938
A. General investigations projects.....	\$1,345,892	\$2,121,075	\$1,622,484	\$2,515,375
B. Structures and improvements.....	43,398,924	46,702,374	41,258,090	43,824,747
C. Operations.....	(634,826)	(513,986)	(272,361)	(1,979,698)
Total.....	44,109,990	48,369,463	42,608,213	44,360,424

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[fol. 4422]

Justification of Estimates

The statement show- above sets forth in summary form the estimates for the navigation, flood control, and hydro-electric program, which totals, for 1938, \$44,360,424 and exceeds by \$1,752,208 the estimated expenditures under this program in 1937. This total estimate for 1938 is based on a series of carefully prepared estimates for each project and activity involved in this program. These detailed estimates are set forth on the following pages. Preceding these detailed estimates and immediately following this statement a series of charts and tables is presented to provide in broad outline some of the major phases of the entire program.

The first exhibit is a plan and profile showing the existing and proposed high dams on the Tennessee River. This exhibit, which is entirely self-explanatory, gives a clear picture of the work being done and to be done in providing a 9-foot navigable channel from Knoxville, Tenn., to the mouth of the river, a distance of 652 miles.

The second exhibit is a tabulation giving data on the principal features of present and proposed dam and reservoir projects. The third exhibit is a tabulation showing the status of channel depths at the various sites. This shows the depths prior to Tennessee Valley Authority construction and the resulting depth in each pool following the construction of a given project. The fourth exhibit is a general statement on floods and the flood-control features of the Tennessee Valley Authority program.

The final exhibit is a chart showing system demand, generator installations, and firm power capacity actual and projected to the end of 1940. Since the 1938 estimate includes amounts totalling \$6,000,000 for four additional generating units, this exhibit will be explained in detail. This study shows that the great amount of water power provided by the Tennessee Valley Authority dams will be wasted unless electric generating equipment is installed so that it may be sold to the market known to exist.

[fol. 4423]

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The 1938 estimate for general investigation projects of \$2,515,375 represents an increase of \$892,891 over the 1937 estimate and an increase of \$394,300 over the actual expenditures for 1936.

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This increase is due principally to the estimate for preliminary project investigations, although small increases are required for general water-control investigations. The estimates for electricity research and development and for general mapping and map records show reductions from the 1937 estimates. This shift in emphasis is occasioned by the necessity for intensive planning both on general investigations and investigations on the main river and tributaries. The flood of January and February of 1937 has demonstrated the need for additional flood-control works in the Mississippi watershed. According to Major General Markham, Chief of Engineers, the flow of the Ohio at that time was 600,000 cubic feet per second greater than any previous estimates. The Tennessee and its tributaries offer opportunities for the construction of storage facilities which will make substantial contributions to the control of the future floods, however great they may be. The investigations provided for in these estimates will more adequately establish the possibilities for economical flood storage, both on the main river and on the tributaries, before construction work proceeds to the point where maximum benefits might be precluded by work already done.

The estimates are explained in detail in the following paragraphs:

1. Water-control Investigations, \$408,626.—This estimate provides for the continuation of investigations contributing to the integrated development of the Tennessee River system to achieve the greatest possible navigation and flood-control benefits for both the Tennessee and Mississippi Rivers. This work involves the collection and compilation of hydrographic data and various engineering and economic studies and reports.

The estimate for hydrographic data of \$158,079 provides for continuation of an intensive stream-gaging program in cooperation with the United States Geological Survey, Water Resources Branch. There are 174 river gage stations in the Tennessee River basin for which data are compiled by the Tennessee Valley Authority. The United States Geological Survey operates 132 of these stations and the Authority operates the remaining 42. The Authority also compiles data from 344 rainfall stations located in

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or near the Tennessee River Basin. The Authority operates and maintains 197 of these stations, the United States Weather Bureau operates 126, and the remaining 21 stations are either operated privately or by other governmental agencies. The Authority operates 46 silt-sampling stations from which data are regularly compiled. Other activities include evaporation measurements, weather forecasting, and preparation of special reports. It should be noted that this [fol. 4424] estimate covers general investigations which cannot be charged directly to preliminary, operating, or construction projects. These data are essential to a full interpretation of the Tennessee watershed as related to flood control on the Tennessee and the Mississippi Rivers.

The 1938 estimates for engineering studies and reports of \$179,002 provides for continuation of a general navigation study involving a complete analysis of the navigation program for the purpose of fixing policies and determining facts and presenting same in a complete report: continuation of a study of floods and flood control on the river, as a whole to determine methods of control and to secure data as to flood control benefits in the Tennessee and lower Mississippi, with particular attention to the value of flood storage on the lower reaches of the Tennessee with respect to its effect on the Ohio and Mississippi; continuation of power studies to determine plant capacities, sequence of power installations, and methods of operation of the system at various States in its development; and development of a coordinated plan for the construction and operation of the several projects. This estimate includes a special study of the flood-control problem at Chattanooga where local protection works will be required in addition to the protection provided by storage reservoirs. Information as to the amount of local protection that can be economically provided is needed in order to determine the amount of additional storage needed to provide complete flood control protection. Also included is a study of coordinated reservoir operation to most effectively utilize available storage capacity in order to reduce flood flows, maintain flows for navigation, and generate power.

The estimate for economic studies and reports of \$71,545 provides for continuation of studies relating to the economics of transportation—rail, water, highway, air, and

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pipe line—in the Tennessee Valley area and contiguous territory, involving, specifically, the collection and making available of data relating to transportation in this area, outlets to markets, accessibility to raw materials from a transportation standpoint, the feasibility of water transportation, possible coordination of existing transportation facilities, and the analysis of the freight rate structure from, to, and within the valley area. This estimate also includes other small general studies relating to the navigation and flood control program.

2. Preliminary Project Investigations, \$1,572,049.—During 1937, investigations on two remaining dams on the upper Tennessee River which are necessary to provide a 9-foot channel to Knoxville were practically discontinued at the recommendation of the House Appropriations Committee. Estimates are included in the 1938 Budget which provide for the resumption of these preliminary investigations in order to determine the exact location, general design, and probable costs of these structures, so that construction can be started in the future. Investigations on tributaries were also discontinued in 1937, and their resumption is provided for in the 1938 estimate. It is urgent that these investigations be renewed so that adequate preparation will have been made for future construction.

Gilbertsville Dam and Reservoir, \$742,439.—The Gilbertsville Dam will be located 22.5 miles above the mouth of the Tennessee River. The amount requested for 1938 provides for the continuation of studies and investigations preliminary to the beginning of actual construction. This preliminary work will be sufficiently advanced by the end of the fiscal year 1938 so that construction of the project can be commenced early in the fiscal year 1939. During 1938 the principal work to be undertaken is as follows:

(1) Subsurface investigations at both the Gilbertsville and the Birmingham sites, the latter being the only feasible alternate site;

(2) Revisions of estimates and reports required to enable initiation of final designs;

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(3) Topographic, dam-site, reservoir land and reservoir utility and cemetery surveys, and area and mosaic mapping;

(4) Preliminary surveys and studies of construction plant, design, hydrographic data, highway and railroad relocation, land acquisition and management, backwater protection, malaria control, reservoir clearing, and general social and economic features of the project.

The reservoir will be 184 miles long, providing navigation to Pickwick Dam. According to present estimates, it will furnish 3,700,000 acre-feet of flood storage. The dam structure will consist of concrete spillway, navigation lock 110 by 600 feet with a maximum lift of probably 68 feet, nonoverflow sections, and intakes for a powerhouse to be constructed as the need for additional generating capacity arises. Earth embankments with a volume of 2,500,000 cubic yards will connect the concrete structure with high ground at each abutment. The over-all length will be approximately 8,300 feet and the maximum height 150 feet.

Watts Bar Dam and Reservoir, \$216,628.—The Watts Bar Dam will be located at the head of the Chickamauga Reservoir, approximately 530 miles above the mouth of the Tennessee River. At the beginning of the fiscal year 1937 the investigation of this site had proceeded to the extent of a preliminary drilling program and preliminary estimates of cost. At that time the project had not been studied in sufficient detail to develop substantially a final layout and sufficient drilling had not been done to determine the exact location of the site.

[fol. 4426] Since no funds were included in the 1937 Budget for the further studies which are essential before design and construction of the project can be undertaken, it is highly important that money be included in the 1938 Budget for this purpose. Otherwise, when construction is authorized, there will be considerable loss of time and possibly some sacrifice in economy.

Approximately the entire 1938 fiscal year will be required for these investigations, which are proposed as follows:

(1) Detailed program of core drilling, test pits, and other foundation investigations, to determine the exact location for the axis of the dam.

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(2) Detailed studies of backwater effects at various communities above the dam, principally Kingston and Harri-man, checking tentative pool levels, and determining back-water damages.

(3) Studies of the layout for structures and development of preliminary design details, so that the plan can be more fully developed and more accurate estimates of construction costs prepared.

(4) Preparation of the final engineering report based on the investigations so as to afford basic information needed by various agencies of the Authority before design, construction, land acquisition, and other activities can begin.

(5) Studies concerning the flood control benefits of this project in relation to the other main river and tributary projects.

Coulter Shoals Dam and Reservoir, \$230,532.—The Coulter Shoals Dam will be located at the head of Watts Bar Reservoir, approximately 600 miles above the mouth of the Tennessee River. The reservoir will extend to Knoxville. There were no funds in the 1937 Budget for completion of investigations at the Coulter Shoals Dam site, other than a small amount to complete preliminary drilling which had been started in May 1936.

It appears that not less than 1 year will be necessary to complete project investigations before the dam can be definitely located and sufficient information developed so that detailed designs and other activities can proceed.

At the time work was stopped, due to lack of appropriations for this project, the general location of what appears to be a favorable site had been found, but the detailed drilling which will be necessary to explore thoroughly this site may develop conditions which will necessitate further exploration and involve an extended drilling program. The foundation rock for this dam will be Knox dolomite, which is subject to extensive solution, and in the progress of [fol. 4427] detailed drilling, cavities may be found which would make the site now contemplated unfeasible for construction. This project has not been investigated to the same extent that the Watts Bar project has been investigated, and furthermore, the foundation difficulties will be

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much greater, due to entirely different rock formation at the Coulter Shoals site. At least one alternate site should be fully investigated.

The studies which have been made for project layout and the cost estimates on the basis of the best data now available are very preliminary and a great deal of work must be done to develop the basic data for further reports. This work will include the following.

(1) Completion of at least one, if not several, extensive drilling contracts.

(2) Study of backwater damages in the reservoir, particularly at Knoxville, balancing the maximum feasible pool level against extensive potential damages, and investigating methods of protection for minimizing these damages.

(3) Preparation of a preliminary report on engineering investigations to enable studies of land acquisition, reservoir clearance, highway and railroad relocation, and similar problems to be investigated, and preparation of a final report to form a basis for the actual work of all activities.

It is extremely important that money be included in the 1938 Budget for the above purposes. Otherwise, when the project is authorized for construction, a year probably will expire before any detailed design or construction could be initiated. It may be anticipated that the foundation conditions at Coulter Shoals will be difficult, and it is both unsafe and uneconomical to initiate a construction program on such a project without knowing to the fullest extent the story on the foundations which are available.

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Mr. Woodrum: What is the status of that project?

Dr. A. E. Morgan: If I may spend just a moment, I will indicate the necessity of this examination.

At the time the TVA was organized, private interests had settled upon a dam site there. It was called the Shannon site, I believe. It is sometimes called the Aurora site. They are close together and they are confused in the popular mind. That had been settled upon by private industry and by the Government engineers. That, you might say, was the official site of that dam. For a couple of years TVA was under great pressure to recommend the beginning of that

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dam and we refused to do so because we felt that the information we had was inadequate and we continued our study of the situation.

It is a difficult site to explore, for the reason that it is in a country that has been raised and lowered within quite recent geologic time. There is about 50 to 100 feet of allu- [fol. 4428] vial soil over the bedrock, and under the soil winding back and forth, there is a river channel 50 to 100 feet deep. You have to explore to find out where that river channel is. Then, it is a region that is faulted and it is a kind of rock that has cavities in it. It is one of the most treacherous places in which to build a dam.

So we refused, against a great deal of pressure locally, to recommend any construction there until we had felt our way. The result is that we have located a site that is entirely superior to the one that was the official site when we came on the job. It is at Gilbertsville, quite a ways below the original site. Not only is it a better site for construction purposes, but it offers a very great possibility for coordinating the control of the Ohio River with that of the Tennessee River.

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Dr. A. E. Morgan: * * * Take flood control on the Mississippi as a whole. The Federal Government has appropriated money for building, but not enough for finding out what to do; and for 50 years, from the original official report in 1874 until the great flood of 1927, estimates of cost of that work were so inadequate that at no time did they amount to as much as 20 percent of the real cost.

I can quote the estimates by the responsible ranking officials during 50 years on the Mississippi to show you that at all times during that period the official estimates of cost of completing Mississippi flood control were at no time 20 percent of what it is now recognized the actual cost will be.

Mr. Taber: Should they be that much? You say they were never 20 percent of what they cost.

Dr. A. E. Morgan: They were never 20 percent of what the actual total cost is now recognized to be. That is because the Government spent money for building, but did not spend enough money in preliminary investigations to find out what they were doing.

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Mr. Taber: You mean the preliminary estimates were never as much as 20 percent of what the total cost was?

Dr. A. E. Morgan: For a period of 50 years, from 1874 to 1927, the official published estimates of cost of Mississippi flood control were never 20 percent of what the actual cost was going to be and is admitted today as necessary.

[fol. 4429]

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Mr. Wigglesworth: What is the ultimate limit of this program you have in mind? How many of these projects are ultimately to be constructed?

Dr. A. E. Morgan: We presented to the Congress a year ago a program for the unified control of the Tennessee River. That includes the construction of the Gilbertsville, Watts Bar, Coulter Shoals, and Fontana Dams, but no others.

Mr. Wigglesworth: Does this picture go beyond that?

Dr. A. E. Morgan: It does not extend beyond those projects. We have no plans beyond that.

But in defining those projects we ought to have a degree of information that we do not yet possess, for a number of reasons.

For instance, the Mississippi River Committee of the National Resources Board, as well as the Army engineers, have indicated that for complete flood control, or for safe flood control, on the Mississippi River it will be necessary or desirable to get a certain amount of storage on the Tennessee River. That estimate is about 10 million acre-feet of storage on the Tennessee.

The structures we have recommended, and that are included in this plan presented to Congress, will store about 8 million acre-feet, and it will be necessary to have from 2 to 4 million acre-feet additional to meet the demands of the control on the Mississippi River.

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Mr. Lilienthal: * * * I would like to refresh the committee's recollection, although you are, of course, familiar with the statute under which we operate, by reading if I may section 9 (a) of the act which pretty well defines what our duty is with respect to electricity, both as to its production and to the marketing. That section reads:

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The Board is hereby directed in the operation of any dam or reservoir in its possession and control to regulate the stream flow primarily for the purpose of promoting navigation and controlling floods. So far as may be consistent with such purpose the Board is authorized to provide and operate facilities for the generation of electric energy at any such dam for the use of the Corporation and for the use of the United States or any agency thereof; and the Board is further authorized, whenever an opportunity is afforded, to provide and operate facilities for the generation of electric energy in order to avoid the waste of water power, to transmit and market such power as in this Act provided, and thereby, so far as may be practicable, to assist in liquidating the cost or aid in the maintenance of the projects of the Authority.

The statute further lays down in considerable detail the policies that are to guide the Board and by which the Board is bound in this matter of the sale of power thus generated. [fol. 4430] Section 10, for example, lays down a policy of preference to States, counties, municipalities and cooperative organizations of citizens or farmers not organized or doing business for profit, but primarily for the purpose of supplying electricity to its own citizens or members.

Section 11, requires that the power shall be distributed and sold equitably among the States, counties and municipalities within transmission distance; and at another point authorization is given in this marketing program for the construction of transmission lines.

That general background indicates, it seems to me, the responsibility of this phase of the program to produce as much revenue as possible within the limits of market possibility and the transmission area. It indicates the kind of customers who are entitled to purchase; priority to public agencies, but including every other kind of customer, including private utilities and industrials. And those customers are included, we believe, with those priorities among customers to which we will refer in analyzing the revenues.

Preliminary to discussing these particular figures with respect, to transmission lines, for which we are asking \$4,700,000 this year, I hope the committee will bear in mind the policies laid down for us and by which we are bound in this act with respect to the marketing of this power:

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that we are not free simply to sell it at the busbar at these various dams if requests are made upon us by applicants to whom we must give preference. Further, in the disposition of power generally, transmission lines are obviously necessary, for two reasons: One, the tying together of this series of great dams (the map on p. 30 indicates the progress of that program); and, second, the building of lines for marketing purposes.

These lines may sometimes be lines between dams, which also serve as marketing lines, or they may be primarily marketing lines which also serve a subsidiary purpose in tying of the dams together.

Pages 498-9

Mr. Lilienthal: * * * The need for power in the Tennessee Valley area has been recognized for some years. It has been classified as a deficiency area by the Federal Power Commission in its careful estimate made under the direction of the Congress as to power resources. It has been confirmed by estimates made before this committee.

In 1935, on page 596 of the hearings before this committee, we stated that our figures and the figures of the Federal Power Commission and substantially of the Army Engineers point to the absorption of the existing surplus within 1 or 2 per cent during 1937, which happens to synchronize with the date when the Wheeler and Norris Dams were to provide a total of four additional generators. That is exactly what has happened. The estimates that had been made indicating a vast surplus have been shown to be unnecessarily pessimistic.

[fol. 4431] In 1935, at the time that the Federal Power Commission studies and our own studies were made, the chief engineer of one of the largest utility companies operating in the South, a very able man, presented estimates as to the situation that will exist in 1940; and I should like to point to these as indicating the basis for our own feeling that the estimates that we have been making have been on some realistic basis.

On page 284 of the hearings before the Committee on Military Affairs in March of 1935, Mr. Yates introduced a table in which he estimated that in 1936 there will be a need in his southern companies of 3,763,000,000 kilowatt-

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hours; and that 4 years hence, in 1940, there will be a need of 4,575,000,000 kilowatt-hours.

We have the actual figures for 1936, and they show these results: 1936 showed an actual energy required and utilized by those companies of 4,644,000,000 kilowatt-hours, as compared to the estimate of 3,763,000,000 kilowatt-hours. The estimate for 1940 was 4,575,000,000 and the actual for 1936 was in excess of that by 100,000 kilowatt-hours.

The fact is that there is a deficiency in the supply of power in the whole Tennessee Valley area.

Pages 529-530

Mr. Lilienthal: * * * You might be interested in a statement indicating, with respect to particular communities, the efforts which the communities have made to buy, and the result of those efforts. I should think it would be appropriate at this point to have a statement inserted in the record.

Mr. Woodrum: We would like to have that inserted in the record.

Mr. Lilienthal: A large number of cities have demonstrated an interest in obtaining lower electricity rates for their citizens by distributing TVA energy through municipally owned plants. Several hundred cities have applied to TVA for energy; many others have communicated with TVA on the matter. It will be recalled that the statute expressly provides that cities and other nonprofit agencies shall be given preference by TVA in the sale of its surplus power, and confers upon such agencies specific rights flowing out of such preference.

In its relations with these cities, the Authority early laid down two guides from which it has not deviated: (1) Whether or not a city should acquire a system to distribute wholesale energy from the Authority's dam was entirely a local question for the community to decide for itself; (2) once a city had decided to acquire a system for distribution of TVA electricity, the Authority took the position that every possible effort be made by the city to purchase existing facilities rather than construct a new and competing system. This position was reiterated time after time. In some instances the Authority, rather than allow [fol. 4432] negotiations between city and utility to fall

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through, sought to carry them on itself after the cities had failed.

By this second guide the Authority sought to preserve the existing systems and protect actual and useful investments of private companies in such properties. At the same time this would permit the citizens to exercise their right under State law to own and operate electrical distribution systems, and their preferential rights conferred by the act of Congress.

Some of the cities had sought to own and operate their distribution systems prior to creation of the Tennessee Valley Authority. In seeking to distribute TVA energy, citizens had expressed themselves at the polls—sometimes by great majorities, as 17½ to 1 in Memphis and 93 to 1 in Lewisburg—or through their duly elected governing bodies to exercise their right to acquire and operate their own electric distribution business.

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(Here follow two photolithographs, side folios 4433 and 4434)

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SECOND DEFICIENCY APPROPRIATION BILL, 1937

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in proposals for purchase of the existing plant. H. B. Sanders, newspaper proprietor and one of the citizens active in seeking municipal ownership and distribution of T. V. A. energy, reported that the company had obtained an injunction against the city, and "also, they have refused to sell their plant to the city or even discuss naming a price."

In Henderson, Tenn., citizens voted a \$35,000 bond issue to build or purchase a distribution system, but the local manager of the West Tennessee Power & Light Co. told city officials that the company was not interested in a sale, that if one were to be considered it would have to be a sale of all the properties owned or controlled by the company.

Table showing towns officially applying for TVA power

State and town	County	Population	How served
Alabama:			
Bevemer	Jefferson	20,721	Birmingham Electric Co.
Boca	Marshall	1,691	Alabama Power Co.
Cherokee	Colbert	659	Do.
Chairman Springs	Clay	356	
Coultland	Lawrence	192	
Elkton	Limestone	543	Alabama Power Co.
Falkville	Morgan	2,204	Do.
Hartsville	Morgan	11,554	Do.
Huntsville	Madison	5,313	Do.
Jasper	Walker	670	Do.
Leighton	Colbert	431	
Madison	Madison	114	
Mooreville	Limestone	639	Alabama Power Co.
Moonton	Lawrence	1,297	Do.
Red Bay	Franklin	678	Rivers Utilities Corporation.
Robertsdale	Baldwin	445	
Rowersville	Lauderdale	3,146	Alabama Power Co.
Russellville	Franklin	7,341	Birmingham Electric Co.
Tarrant City	Jefferson	427	
Town Creek	Lawrence	519	
Vina	Franklin	430	
Valley Head	DeKalb		
Arkansas:			
El Dorado	Union	16,421	Arkansas General Utility.
Paragould	Greene	3,996	Arkansas Utilities Co.
West Memphis	Crittenden	865	Arkansas Power & Light.
Georgia:			
Cartersville	Bartow	5,250	Municipal.
Dalton	Whitfield	8,160	Do.
Waycross	Ware	15,510	Georgia Power & Light Co.
Illinois:			
Harrisburg	Saline	11,625	Central Illinois Public Service Co.
Metropolis	Maumee	8,573	Municipal.
Kentucky:			
Fulton	Fulton	2,502	Kentucky Utilities Co.
Middlesboro	Bell	10,350	Do.
Trenton	Todd	524	Kentucky-Tennessee Light and Power Co.
Mississippi:			
Aberdeen	LaFayette	3,925	Mississippi Power Co.
Bruce	Calhoun	946	To be served by Pontotoc County Electric Power Association
Coffeyville	Yalobusha	458	Mississippi Power & Light Co.
Fulton	Itawamba	927	Municipal.
Greenwood	Leflore	11,123	Do.
Hickory Flat	Benton	337	Municipal.
Oxford (Contract refused by referendum)	LaFayette	2,800	Do.
Ripley	Tippah	1,498	Ripley Utilities Co.
Starkville	Oktibbeha	3,612	Mississippi Power Co.
State College	Clay	4,677	
West Point	Haywood	2,414	Municipal.
North Carolina: Waynesville			
Ohio:			
Cincinnati	Hamilton	431,160	Cincinnati Gas & Electric Co.
Portsmouth	Scioto	42,580	Ohio Power Co.

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Table showing towns officially applying for TVA power—Continued.

State and town	County	Population	How served
Tennessee			
Adamsville	McNairy	643	Tennessee Electric Power Co.
Armore	Oiles		
Bemis (contract negotiations in progress)	Madison		Bemis Bag Co.
Big Sandy	Benton	603	Tennessee Light & Power Co.
Burton	Carroll	1,112	Do.
Chattanooga	Hamilton	119,798	Tennessee Electric Power Co.
Clarksville	Montgomery	9,342	Kentucky-Tennessee Light & Power Co.
Clinton	Anderson	1,927	Tennessee Electric Power Co.
Coal Creek	do.	1,418	Do.
Columbia	Maury	7,982	Do.
Decaturville	Decatur	419	
Dresden	Weakley	1,047	Kentucky-Tennessee Light & Power Co.
Dyer	Gibson	1,214	Do.
Dyersburg	Dyer	8,733	Municipal.
Etowah	McMinn	4,300	Etowah Power Co.
Fayetteville	Lincoln	3,822	Tennessee Electric Power Co.
Gallatin	Sumner	3,060	Kentucky-Tennessee Light & Power Co.
Olney	Weakley	780	Do.
Grand Junction	Hardeman	824	Interstate Utilities Co.
Greenville	Greene	8,544	Tennessee Eastern Electric Co.
Greensfield	Weakley	1,429	Kentucky-Tennessee Light & Power Co.
Humboldt	Gibson	4,613	West Tennessee Power & Light Co.
Jellico	Campbell	1,530	Tennessee General Utilities Co.
LaFollette	do.	2,637	Tennessee Electric Power Co.
Lawrenceburg	Lawrence	3,102	Municipal.
Lebanon	Madison	4,656	Do.
Leicester City	Loudon	4,470	Tennessee Electric Power Co.
Lewisburg	Marshall	3,112	Do.
Livingston	Overton	1,828	Do.
Martin	Marion	3,300	Kentucky-Tennessee Light & Power Co.
Morristown	Hamblan	7,306	Orange County Electric Co.
Moscow	Fayette	296	
Murfreesboro	Rutherford	7,963	Tennessee Electric Power Co.
Obion	Obion	1,100	Kentucky-Tennessee Light & Power Co.
Oliver Springs	Roane	680	Tennessee Electric Power Co.
Park	Henry	8,164	Kentucky-Tennessee Light & Power Co.
Parsons	Decatur	915	Tennessee Electric Power Co.
Preppen's Home	Hawkins		
Ridgely	Lake	979	Southern Utilities Co.
Ripley	Lauderdale	2,330	West Tennessee Power & Light Co.
River	Obion	417	
Rockwood	Roane	3,686	Tennessee Electric Power Co.
Rogersville	Hawkins	1,880	Holston River Electric Co.
Rutherford	Gibson	747	Kentucky-Tennessee Light & Power Co.
Savannah	Hardin	1,120	Tennessee Electric Power Co.
Sharon	Weakley	606	Kentucky-Tennessee Light & Power Co.
Springfield	Robertson	5,577	Municipal.
Tomb	Hardeman	296	
Union City	Obion	5,365	Municipal.
Western State Hospital	Hardeman		
Winchester	Franklin	2,210	Tennessee Electric Power Co.
Virginia, Dugannon	Scott	282	

[fol. 4435]

APPENDIX "I"

Excerpts Read Into the Record by Defendants from Complainants' Exhibit No. 365, Being "Hearings Before the Committee on Military Affairs, House of Representatives, 74th Congress, 1st Session, Vol. 1"

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Mr. Lilienthal: * * * There have been some suggestions from partisan sources that there is now existing an unreasonable surplus power and that we are adding to the surplus. Our computations show that there is a threat of a deficit of power in the Tennessee Valley and in the country as a whole.

Pages 24-25

Mr. Lilienthal: * * * Furthermore, that duty to market power is related to the duty to prevent waste. It is a painful thing to anyone who has a realization of the implications of the situation to see Wilson Dam today. Mr. Chairman, on account of the high water, almost all of the gates of Wilson Dam are open and the water is pouring over the spillway, almost the entire length of the spillway.

Page 26

Mr. Lilienthal: * * * Before the Tennessee Valley Authority as a corporation had been organized, a large number of the communities in that section of Mississippi had written most emphatic messages to the incoming directors insisting that those communities were going to have some of that power. Some of the communities took formal action, others acted through chambers of commerce and school boards and the like.

[fol. 4436]

Page 30

The Chairman: This non-profit corporation was organized by the citizens of that section of Mississippi and financed by the Tennessee Valley Authority:

Mr. Lilienthal: Upon their own initiative; yes, sir.

The Chairman: And you deal with them and they are in fact an entirely separate legal entity, with whom you have a contractor's relation?

Mr. Lilienthal: They run their own show.

APPENDIX "I"

Page 37

Mr. May: What was their original valuation of it, when they first submitted it to you?

Mr. Lilienthal: I do not know. I can submit that figure, but the property was admittedly badly depreciated and allowed to run down, and a great deal of reconstruction has been necessary in order to put it in working condition.

Mr. May: I will be obliged to you if you will give me the figures on what their original proposition was, or what their estimated value of it was.

Mr. Lilienthal: I have it now.

The company put a replacement value new on the inventory of \$1,628,495.00. The purchase price was \$850,000.00, which is 52 per cent of the replacement value new.

Now, it is a well known fact to people in this field that the electric companies have been paying dividends without building up adequate reserves for depreciation and maintenance, and this company was in that situation. It would have violated our trust as public officers to pay a nickel more for the property than it was worth at the time, despite that error in the past. We paid for the property as it stood.

[fol. 4437]

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Mr. Lilienthal: • • • As to TVA, we never suggested building competing distribution facilities, and have consistently urged against it by others, in season and out; we have tried hard to prevent a situation where that was the only way out.

Page 78

Mr. Lilienthal: I think that we paid too much for the Mississippi property. I always felt that it was not worth more than 40 per cent of its replacement cost new, because it was so badly run down.

Mr. May: Are you referring to those towns in Northern Mississippi?

Mr. Lilienthal: Yes. We paid 50 per cent of what they thought it would cost to replace it new.

Mr. May: Why were you anxious to pay more than you thought they were worth?

APPENDIX "I" 6

Mr. Lilienthal: Like in every other deal, we believed that it would work out, and we didn't want to see those towns build competing plants. As a matter of fact, it has proven out very satisfactorily by and large.

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Dr. Morgan: * * * The high dams are of very much greater value to navigation than the low dams are.

One reason is that in passing through a lock, it takes about so long to open the locks, and to close them and it is much [fol. 4438] quicker to pass through 1 high lock than it is through 3 or 4 or 6 or 7 low locks.

Then, between the locks, with the high dams you have deep water and a wide channel, and navigation is far more effective in a broad, open channel than it is in a narrow cut.

You have that situation on the Panama Canal. The difficult navigation on the canal lies in the Culebra Cut, which is narrow and restricted. In the wide open channels vessels can pass and maneuver. Wide channels are much superior.

Another very great advantage of high dams is in relation to the enormous deposits of silt which are coming down from the tributaries. Above the high dams there is space at the bottom of the reservoirs. If a dam is 50 feet high, it would have 20 feet of bottom space for the deposit of silt, and that might be enough to last for a hundred years of deposits or 50 years of deposits, until we can get the silt control under way.

If we should build the low navigation dams, within 10 years we might be putting dredges in to dredge those channels open again.

So, from the standpoint of economy of travel and of locking, from the standpoint of easier manipulation of vessels in a broad, open channel, than in a narrower one, from the standpoint of the prevention of silting, and the elimination of the expense of dredging, the high dams are unquestionably superior to the low dams.

Then again, in those high dams, the water is backed up in some of the tributaries and we get many more miles of navigable channels than we do with a low dam that creates navigable depth just within the main channel.

APPENDIX "I"

So, taking the project as a whole, there is no comparison between these high dams and the low dams.

[fol. 4439]

APPENDIX "J"

Excerpts Read Into the Record by Defendants from Complainants' Exhibit No. 366, Being "Hearings Before the Committee on Military Affairs, House of Representatives, 74th Congress 1st Session, Vol. 2"

Pages 826-827

Mr. Schaefer: Mr. Lilienthal; I believe the last time you appeared before the Committee you made a statement that at the present time you had surplus power and you were trying to find ways and means of disposing of that power; is that correct?

Mr. Lilienthal: Yes, sir.

Mr. Schaefer: Being one of the directors of this big corporation, under what economic theory do you think it advisable to construct more electric-producing units when you cannot dispose of the power you now have?

Mr. Lilienthal: My conception of the economic theory is this, Mr. Congressman, that there are certain major public purposes that the law provides for; navigation, flood control, soil erosion, and similar purposes. Those are affected by the building of a dam.

Mr. Schaefer: Will you pardon me just a moment? I was not raising that point of going ahead with those projects, at all. My statement was merely in connection with purchasing equipment necessary to produce the power.

Mr. Lilienthal: The installation of the generators?

Mr. Schaefer: Yes. That is what I am referring to.

Mr. Lilienthal: We have made computations which, in graph form and otherwise, have been submitted to the committee for this record, showing the estimates of the need for power in that section. It appears pretty clear—and the figures of the power Commission seem to confirm it—that [fol. 4440] there will be a demand, a need for that power by the time that installation is put in.

At Wheeler Dam we have only one unit put in, although there is room for more.

APPENDIX "J"

No plans are being made for present installation of power facilities at all at Pickwick Dam. It is purely a navigation dam.

At Norris two units are the full capacity of that storage dam.

As I said, Wheeler has one unit, although more can be put in. Pickwick has none, and Wilson at present has eight.

We have tried to relate what we estimate will be the need for the use of those particular facilities to the facilities that we have. As greater need arises in the future, provision is made for installing additional equipment.

Mr. Schaefer: But your judgment and opinion are based on this report of the Power Commission to a great extent; is that the idea?

Mr. Lilienthal: No; I would not say that. At the time that our plans were made, we made our own investigations. We had made them prior to that time, based pretty largely on a study of the past history of the electrical industry in the United States and the forecast methods that are generally used by utility companies in that respect.

You will recall one of the charts showed the Alabama Power Co., had made a forecast for the following year. While it is based on a technic that I am not entirely familiar with, there is a technic that engineers use in forecasting future demand.

That has been employed in trying to see whether or not at the end of the construction period the need will be such as to sustain increased equipment, and then we translate results, or these engineers do, in terms of so many additional generators needed.

[fol. 4442] IN UNITED STATES DISTRICT COURT

STIPULATION AS TO STATEMENT OF EVIDENCE

It is hereby stipulated and agreed between the appellants and appellees, by their solicitors, that the above and foregoing statement of evidence, including the exhibits, is complete, true and correct and may be approved by the Judges.

Baker, Hostetler, Sidlo & Patterson, Trabue, Hume and Armistead, Frantz, McConnell & Seymour, by Charles D. Snapp, Solicitors for Appellants. William C. Fitts, Jr., Solicitors for Appellees.

[fol. 4443] IN UNITED STATES DISTRICT COURT

(Caption omitted)

ORDER APPROVING STATEMENT OF EVIDENCE—Filed April 16, 1938

It appearing to the Court that the foregoing statement of the evidence, together with the exhibits, is true, complete and properly prepared and includes all the evidence necessary for a decision of the questions presented by the Appeal, the same is hereby approved and ordered filed as a Statement of the Evidence to be included in the Record on Appeal in the above styled cause, all as provided for in Paragraph (b) of Equity Rule 75.

Approved for entry.

Florence E. Allen, U. S. Circuit Judge. John J. Gore, District Judge. John D. Martin, District Judge.

Baker, Hostetler, Sidlo & Patterson, Trabue, Hume & Armistead, Frantz, McConnell & Seymour,

O. K. By Charles D. Snapp, Solicitors for Appellants.

O. K. William C. Fitts, Jr., Solicitors for Appellees.

[fol. 4444] IN UNITED STATES DISTRICT COURT

(Caption omitted)

PRÆCIPUE FOR TRANSCRIPT OF RECORD—Filed April 16, 1938

To the Clerk:

The appellants and appellees having through their solicitors agreed as to what shall be included in this præcipe, you will please make a transcript of record to be filed in the United States Supreme Court pursuant to an appeal allowed in the above entitled cause and include in such transcript of record the following pleadings, papers, documents, and exhibits, and no others, to wit:

1. The original Bill of Complaint with all of the exhibits attached thereto.

2. Order of Removal signed by A. E. Mitchell, Chancellor of the Chancery Court of Knox County, Tennessee.

3. Certificate of the Clerk and Master of the Chancery Court of Knox County, Tennessee, to transcript of removal.

4. Certificate of Disqualification of George C. Taylor, District Judge, and designation of Judge John J. Gore.

5. The Amendment to the Bill of Complaint filed August 10, 1936.

[fol. 4445] 6. Defendants' Motion filed August 14, 1936 to Quash Service of Subpœna and Dismiss Bill of Complaint for Lack of Jurisdiction.

7. Memorandum opinion filed October 17, 1936, overruling Defendants' Motion to Quash Service of Subpœna and Dismiss the Bill of Complaint for Lack of Jurisdiction.

8. Decree, filed October 19, 1936, overruling Motion to Quash Service of Subpœna and Dismiss Bill of Complaint.

9. Defendants' Motion filed October 20, 1936, to Dismiss Bill of Complaint.

10. Memorandum opinion filed November 9, 1936, overruling Defendants' Motion to Dismiss.

11. Decree, filed November 12, 1936, overruling Motion to Dismiss.

12. Answer to the Bill of Complaint filed by the Defendants on November 24, 1936, omitting, however, all exhibits attached thereto except Exhibits "A" and "K" and insert-

ing at the place where Exhibits "A" and "K" would be otherwise inserted the following statements:

Exhibit "A" attached to Answer to the original Bill of Complaint is the same as Complainants' Exhibit No. 328, being a copy of the Report to Congress by TVA on the Unified Development of the Tennessee River System, dated March 1936, and is here omitted since Complainants' Exhibit No. 328 is transmitted as an original exhibit.

Exhibit "K" attached to the Answer to the original Bill of Complaint is a copy of the printed record in the case of Tennessee Valley Authority, et al., v. Ashwander, et al., and is transmitted as an original exhibit.

13. Memorandum opinion filed December 22, 1936, granting the preliminary injunction.

14. Order filed January 19, 1937, fixing time for taking depositions.

15. Order filed March 19, 1937, fixing time for taking depositions.

16. Defendants' Motion filed June 14, 1937, to strike portions of the Bill of Complaint.

17. Defendants' Motion filed June 14, 1937, for Bill of Particulars.

18. Opinion of the United States Circuit Court of Appeals [fol. 4446] for the Sixth Circuit in the case of Tennessee Valley Authority, et al., Appellants, v. The Tennessee Electric Power Company, et al., Appellees, decided May 14, 1937, and filed on June 15, 1937. (The opinion is here omitted as a copy of it is attached as "Appendix C" to the "Separate Statement As To Jurisdiction", which is Item No. 56 herein.)

19. Order, filed June 16, 1937, Dissolving Preliminary Injunction.

20. Order, filed July 3, 1937, on Defendants' Motion to Strike portions of the Bill of Complaint.

21. Order, filed July 3, 1937, appointing Hal H. Clements, Jr., Special Master.

22. Order filed July 8, 1937, on Defendants' Motion for Bill of Particulars.

23. Bill of Particulars filed August 6, 1937.

24. Stipulation filed August 14, 1937, and Amendment thereto filed September 2, 1937.

25. Suggestion filed August 28, 1937, that Act of Congress of August 24, 1937, requires application to Senior or Presiding Circuit Judge for designation of two additional judges to hear cause, omitting the draft of the request for designation of additional judges.

26. Motion filed September 20, 1937, to compel Defendants to produce documents and permit inspection thereof, together with the exhibits attached thereto.

27. Motion filed September 20, 1937, for leave to take the deposition of Harold L. Ickes, omitting however, Exhibit "A" thereto attached and inserting in the place where such exhibit would be otherwise inserted the following statement:

Exhibit "A" attached to the motion for leave to take the deposition of Harold L. Ickes is a copy of the order appointing Hal H. Clements, Jr., as Special Master, and to avoid duplication is here omitted.

28. Application of Complainants filed September 20, 1937, for an order requiring Defendants to produce documents, or, in the alternative, for extension of time for taking testimony before Special Master.

29. Orders filed September 21, 1937, designating judges to try case.

29½. Affidavit of James Lawrence Fly filed September 27, 1937.

30. Order filed September 29, 1937, permitting Complainants to amend the motion to compel Defendants to produce certain documents and permit inspection thereof.

[fol. 4447] 31. Order filed September 29, 1937, permitting Complainants to amend the motion to take the deposition of Harold L. Ickes, together with Exhibit "C" attached thereto.

32. Memorandum decision filed September 29, 1937, overruling Complainants' motion for leave to take the deposition of Harold L. Ickes, overruling Complainants' Motion for an order requiring Defendants to produce documents, or, in the alternative, for an extension of time for taking testimony before the Special Master and overruling Complainants' motion to compel Defendants to produce documents and permit inspection thereof.

33. Order filed September 29, 1937, overruling and denying Complainants' motion for leave to take the deposition of Harold L. Ickes.

34. Order filed September 29, 1937, overruling and denying Complainants' motion to compel Defendants' to produce documents and permit inspection thereof.

35. Order filed September 29, 1937, overruling and denying application of Complainants for an order requiring Defendants to produce documents, or, in the alternative, for extension of time for taking testimony before the Special Master.

36. Supplement filed October 21, 1937, to Bill of Particulars.

37. Memorandum opinion filed November 1, 1937, on Complainants' motion to require Defendants to produce documents and permit the inspection thereof, Complainants' motion for an order requiring Defendants to produce documents, or, in the alternative, for an extension of time for taking testimony before Special Master, and Complainants' motion for leave to take the deposition of Harold L. Ickes.

38. Petition filed November 12, 1937, for rehearing motion to take the deposition of Harold L. Ickes.

39. Motion filed December 6, 1937, for leave to take deposition of Harold L. Ickes, together with the affidavit attached thereto.

40. Motion filed January 18, 1938, on behalf of the Complainants to strike and disregard briefs filed by the Defendants on January 17, 1938, together with the affidavit attached thereto.

41. Complainants' suggested Findings of Fact, filed January 19, 1938.

42. Defendants' suggested Findings of Fact and Conclusions of Law, filed January 19, 1938.

[fol. 4448] 43. Opinion of the Court, dated January 21, 1938, and filed January 24, 1938.

44. Order filed January 24, 1938, overruling Complainants' motion to strike and disregard briefs filed by Defendants on January 17, 1938.

45. Order filed January 24, 1938, regarding Findings of Fact and Conclusions of Law requested by the Complainants and Defendants.

46. Final decree, filed January 25, 1938.

47. Motion filed February 7, 1938, to dismiss suit as against Georgia Power Company without prejudice.

48. Georgia Power Company's petition for rehearing filed February 7, 1938, together with all exhibits attached thereto; omitting, however, Exhibit 2 except as noted below and in-

serting in the place where said exhibit would be otherwise inserted the following statement:

Exhibit 2 is a copy of the motion referred to herein as being filed February 7, 1938.

49. Motion filed February 8, 1938, by Defendants for Findings of Fact and Conclusions of Law, omitting, however, the attached draft of Findings of Fact and Conclusions of Law and inserting in the place where same would otherwise be inserted the following statement:

The draft of Findings of Fact and Conclusions of Law attached to the motion is the same as the Findings of Fact and Conclusions of Law filed by the court on February 23, 1938, and is here omitted.

50. Order filed February 22, 1938, dismissing the Georgia Power Company without prejudice.

51. Order filed February 23, 1938, on Findings of Fact and Conclusions of Law.

52. Findings of Fact and Conclusions of Law, filed February 23, 1938.

53. Notice of Appeal served on Appellees on February 23, 1938, and filed on the same date.

54. Petition for Appeal filed February 24, 1938.

55. Assignment of Errors filed February 24, 1938.

56. Separate Statement as to Jurisdiction together with the appendices, filed February 24, 1938.

57. Order filed February 24, 1938, allowing appeal.

58. Appeal bond, filed February 24, 1938.

[fol. 4449] 59. Citation, including acceptance of service by Appellees on February 24, 1938, and filed on the same date.

60. Acknowledgment of service by Appellees of copies of the Petition for Appeal, Order Allowing Appeal, Assignments of Error, Statement as to Jurisdiction and Notice of Rule 12, Paragraph 3, of the Rules of the Supreme Court, filed February 24, 1938.

61. Complainants' exception filed March 3, 1938, to the Order of February 23, 1938. (Item No. 51 herein.)

62. Order of the Court for transmission of original exhibits filed April 4, 1938.

63. Notice of the lodging of the Statement of Evidence and exhibits, and the acknowledgment of service thereof, filed April 7, 1938.

64. Order, filed April 16, 1938, approving Statement of Evidence.

65. Statement of the evidence under Equity Rule 75, including the exhibits, all of which the court approved.

66. Original exhibits to be transmitted to the Supreme Court as enumerated in the Court's order of April 4, 1938, referred to herein as item No. 62.

67. This Praecept.

68. Certificate of the Clerk.

Said transcript to be prepared as required by law and the rules of this Court and the rules of the Supreme Court of the United States and to be filed in the office of the Clerk of the Supreme Court of the United States on or before the 25th day of April, 1938.

Baker, Hostetler, Sidlo & Patterson, Trabue, Hume & Armistead, Frantz, McConnell & Seymour, by Charles D. Snapp, Solicitors for Appellants. Wm. C. Fitts, Jr., Solicitor for Appellees.

[fol. 4450] Clerk's certificate to foregoing transcript omitted in printing.

[fol. 4451] IN SUPREME COURT OF THE UNITED STATES

STATEMENT OF POINTS TO BE RELIED UPON—Filed April 18, 1938

Come now The Tennessee Electric Power Company, Franklin Power & Light Company, Memphis Power & Light Company, Southern Tennessee Power Company, Birmingham Electric Company, Mississippi Power Company, Appalachian Electric Power Company, Carolina Power & Light Company, Tennessee Public Service Company, Holston River Electric Company, Alabama Power Company, Kentucky & West Virginia Power Company, Inc., Kingsport Utilities, Incorporated, Kentucky-Tennessee Light & Power Co., West Tennessee Power & Light Company, Mississippi Power & Light Company, East Tennessee Light & Power Company and Tennessee Eastern Electric Company, appellants in the above entitled cause and adopt their Assignments of Error as their Statement of Points to be Relied Upon.

R. T. Jackson. Charles C. Trabue. Charles M. Seymour.

Dated April 18, 1938.

[fol. 4453] [File endorsement omitted.]

[fol. 4454] IN SUPREME COURT OF THE UNITED STATES

STIPULATION AS TO PRINTING OF RECORD—Filed April 18,
1938

It is hereby stipulated between the appellants and appellees, by their attorneys, that in printing the Record in the above entitled cause the Clerk shall only omit therefrom the following maps, drawings, documents and papers:

Complainants' Exhibit Nos. 7, 12, 27, 29, 33, 37, 41, 45, 49, 54, 74, 82, 89, 98, 101, 105, 105c, 105d, 106, 107, 108, 109, 112-116, inclusive, 182, 183, 184, 187, 199, 205-210, inclusive, 266, 320, 321, 326-330 inclusive, 332, 332a, 333a, 334, 335a, 336, 338, 342-346 inclusive, 350, 351, 352, 354, 357, 358, 359, 361, 362, 364, 365, 366, 372, 409-411 inclusive, 485, 487-496 inclusive, 503, 646, 907, 909, 912-915 inclusive, 925, [fols. 4455-4456] 933, 936 and 942.

Defendants' Exhibit Nos. 31, 32, 36, 37, 38, 40, 44, 49, 50, 55-64 inclusive, 66, 72, 73, 81, 83, 86, 87, 89-93 inclusive, 95, 96, 97, 98, 104, 109, 110, 116, 118-125 inclusive, 130, 132, 136a, 136b, 137, 138, 153, 154, and Exhibit "K" to Defendants' Answer.

It is further stipulated that the maps, charts, documents, papers, etc., above mentioned which are to be omitted from the printed Record shall be preserved by the Court and may be referred to by counsel, or the Court, if deemed necessary during the course of the argument or otherwise in the disposition of the cause.

Charles C. Trabue, Charles M. Seymour, R. T. Jackson, Counsel for Appellants. William C. Fitts, Jr., Counsel for Appellees.

Dated April 18, 1938.

Endorsed on cover: File No. 42,456. E. Tennessee, D. C. U. S. Term No. 975. The Tennessee Electric Power Company, et al., appellants, vs. Tennessee Valley Authority, Arthur E. Morgan, Harcourt A. Morgan, and David E. Lilienthal. Filed April 18, 1938. Term No. 975, O. T., 1937.